

# THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—19TH YEAR.

SYDNEY, SATURDAY, NOVEMBER 19, 1932.

No. 21.

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ANTENATAL TREATMENT OF BREECH PRESENTATIONS. <sup>1</sup>		NOTICE . . . . .	645
By H. C. E. DONOVAN, M.B. (Sydney), F.R.A.C.S., Honorary Surgeon, The Women's Hospital, Crown Street; Demonstrator in Operative Obstetrics, The University of Sydney.		BOOKS RECEIVED . . . . .	645
THERE is no doubt that breech presentations are a very real cause of loss of foetal life. It was formerly stated that a pelvic delivery did not add appreciably to the woman's risks, but in view of the facts that labour is usually prolonged, that there is far more wounding of the passages, and, above all, that such complications as extension of the legs, arms or head necessitate the passage of the hand into the vagina and in some cases into the uterus, I am convinced that more carefully compiled		MEDICAL APPOINTMENTS . . . . .	646
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statistics would disprove this comforting belief. Owing to the fact that so many breech deliveries are premature and relatively easy, there is a tendency to forget the difficulties and dangers to both mother and foetus that are almost inseparable from the delivery of a large child in a first labour. No one who has had personal experience of the trials, anxieties and dangers of a difficult breech delivery and who has surveyed the trauma inflicted on the mother and the risk incurred by the child, can fail to be permanently impressed by the gravity of pelvic presentations, nor be unwilling to welcome any means of treatment that is likely to diminish the danger to both mother and child.

### Frequency and Dangers.

Let us first consider the frequency and dangers of breech deliveries. The stated frequency varies with different authors, and this depends to a large extent on whether premature deliveries and twins are

<sup>1</sup>Read at a meeting of the New South Wales Branch of the British Medical Association on September 29, 1932.

included. Edgar gives 3·2% including multiple births and premature deliveries. Pinard gives the figures as 3·3 in 199,000 cases, but states that it is 1·5 if only full-time cases are included. De Lee gives Karl Braun's percentage as 2·7 and Shröder's as 3·1. Fairbairn refers to one in forty, if premature deliveries are included. In 18,427 deliveries in the in-patient department of The Women's Hospital there occurred 855 breech cases (4·6%).

Concerning maternal results, I have little more than experience and impressions on which to base the statement that there is more trauma and risk of sepsis as far as the mother is concerned, and I have been unable to find statistics showing the percentage morbidity and mortality. With regard to the foetus, many figures are available, and all are alarming. Edgar gives 20% foetal mortality. De Lee 15%, Eardley Holland 10%, Fairbairn 15%, "with more in *primiparae*". But the latest available are those published by G. F. Hibberd in *The British Medical Journal* of August 29, 1931, page 369. These are collected from eight leading hospitals in England and show 170 deaths in 487 cases, a mortality of 36%, and an additional neonatal death rate of 37 cases or a further 8%. In the same article he quotes figures from Guy's Hospital which showed that the total still-birth and neonatal death rate was 39% in *primiparae* and 22% in *multiparae* in "uncomplicated" cases; the rate rose as high as 66% in *primiparae* and 64% in *multiparae* in "complicated cases". These latter figures are appalling, whatever the standard of "complicated", and it behoves us not to neglect anything in the way of prophylaxis or treatment that may reduce this toll of nascent life.

#### Diagnosis.

Diagnosis depends on painstaking examination and the careful consideration of a number of points taken together. The important points are the presence of the breech at the pelvic inlet and the head either under the liver or the spleen. The head is harder, rounder, smoother, more mobile and more even in consistence than the breech, and it can be ballotted from side to side independently from the body. In anterior positions the back is readily made out at the level of the umbilicus. On tracing this upward, the fingers slip over the shoulder and the gap corresponding to the neck becomes obvious. On tracing the back toward the pelvis the fingers cannot be made to hook over the anterior shoulder, as in vertex presentations, but pass on to a relatively hard mass of varying consistency and not very definite outline, which is the breech. In posterior positions the back is less easily localized and followed upward and downward, but the groove of the neck can be felt. In posterior positions the head is more prominent, and its roundness, hardness and mobility are more easily demonstrated. The diagnosis is confirmed by the fact that the heart sounds are heard with maximum intensity above the umbilicus.

Bimanual examination may clinch the diagnosis in doubtful cases. The fact that the presenting part is less hard and cannot be fixed like a ball between the vaginal and abdominal hands distinguishes the breech from the head.

#### *Difficulties in Diagnosis.*

Excess of abdominal fat may make the diagnosis practically impossible by palpation. Nervousness of the patient and rigidity of the abdominal muscles may make palpation of the foetal parts very difficult. Nervousness and abdominal rigidity may usually be overcome by placing the patient on a flat, firm surface, with shoulders and head slightly raised, and, having one's hands warm and dry, by sliding them from place to place over the abdomen, by refraining from hasty or jerky prodding and by the exercise of patience and gentleness. Use the flat part of the first joints of the fingers and not the finger tips. Hydramnios beyond a minor degree renders examination difficult or impossible.

Practice in abdominal palpation and the summing up of the findings will make the diagnosis certain in the great majority of cases. If you cannot make a diagnosis by a careful and patient examination, the use of a general anaesthetic is justifiable. This relaxes both abdominal and uterine muscles, and usually places the diagnosis beyond doubt. In some obese patients and in the presence of marked hydramnios, diagnosis may be impossible by abdominal examination, and X rays then give us the only means of diagnosis. They should be very rarely necessary. In hydramnios accurate diagnosis is of little importance, as labour is then usually premature, deformities and monstrosities are often present, and consequently the correction of the presentation as an antenatal measure is of little importance.

Errors in diagnosis may also occur in the case of a frank breech. The extension of the legs renders the breech harder and more compact, and if it is partly engaged in the brim, it may feel somewhat like a head. Moreover, in these cases there is less mobility of the head at the fundus, and the presence of the feet by the sides of the head may make the upper pole less definite, and it may be mistaken for a breech. However, a careful examination should usually make the diagnosis clear by revealing the neck groove and shoulders.

#### *Position of the Foetus.*

In vertex and face presentations the actual position of the foetus may be of vital importance, but in breech presentations it matters not whether the back of the child lies to the back or front of the mother. Posterior positions do not in any way affect the prognosis for mother or child.

#### *Attitude of the Foetus.*

The attitude of the foetus is of major importance. Just as in occipito-posterior presentations most of the difficulties arise from alteration of the normal attitude of head flexion, so in pelvic presentations

extension of the legs at the knees adds seriously to the dangers to both child and mother. If the breech presents in a normal attitude of flexion, external version during pregnancy is usually easy, and if the labour is allowed to proceed as a breech, the difficulties are less than in some varieties of abnormal attitude. The abnormal attitudes that occur in breech presentations are various departures from the attitude of universal flexion. Thus the legs may be extended at hips and knees, giving a footling; the hips may be extended and the knees flexed, resulting in a knee presentation; or the hip may be flexed and the knees extended, resulting in a frank breech. A footling or knee presentation adds no great difficulties or dangers, but a frank breech is a serious complication, adding to both foetal and maternal risks. The frank breech has a larger circumference than a normal breech, the position of the legs alongside the body interferes with lateral flexion of the trunk to enable it to follow the curve of the pelvic canal. These factors combine to cause impaction in mid-pelvis, the extension at the knees by bringing down a leg renders treatment more than usually difficult. Unfortunately, it is these very cases in which correction is most needed, that turning is the most difficult. This is because the presence of the legs alongside the body and the extension of the spine that usually accompanies this condition, render the body of the foetus longer than usual and more rigid, and in consequence less easy to compress into a spherical shape as a preliminary to version.

Other variations in foetal attitude are extension or straightening of the back, which so often accompanies extension of the legs along the body, and extension of the arms. Extension of the arms is certainly in most cases an acquired condition arising during the second stage of labour, but sometimes it is present prior to labour, and cases have been reported in which a skiagram taken as early as the sixth month has shown the arms raised above the head.

#### *Diagnosis of Attitude.*

Diagnosis of attitude is never easy and is frequently impossible by abdominal palpation, but in many cases we can suspect that we are dealing with a frank breech and in some cases we can be certain. In frank breech the foetus is longer than normal, on account of the accompanying extension of the back. The head is found in the mid-line at the fundus, instead of under the liver or spleen. This position is brought about by the presence of a foot at each side of the head and the straightening of the back. In favourable cases the feet can be actually felt lying on each side of the head. Lastly, in attempting to perform external version it may be impossible to make the head and breech approach each other and the back to curve. The fact that version fails with a normal amount of liquor and other conditions favourable is evidence in itself that we are dealing with a frank breech. Finally, the attitude can be accurately determined in doubtful cases by an X ray picture.

#### **External Cephalic Version.**

Statistics show that the foetal mortality and neonatal death rate in breech deliveries are appallingly high. Admittedly this mortality could be considerably reduced if all cases received the most skilful management with skilled delivery and the avoidance or timely correction of such deformities as extension of the legs, arms and head, but such an ideal is scarcely attainable under conditions of domiciliary practice. Moreover, the universal attainment of the necessary skill to achieve such results can be obtained only at the expense of a high foetal mortality during the acquisition stage. There is no complication of child-birth in which individual skill and experience will compare more favourably with the results of lack of skill or inexperience than in the delivery of a difficult breech.

The arguments against version, to be justified, should show that the risks involved in external version are as great as the risks to the life of the child and the tissues of the mother, so often inseparable from the delivery of the child as a breech. The risks usually described are, first, damage to or partial separation of the placenta. I have seen only one such case, and I have on occasion seen considerable force used without damage. The other risk mentioned is prolapse of the cord and small parts. This risk exists in theory at the stage during version when the child is in a transverse lie. I have not seen this complication and I am certain that its risks are very considerably less than those inseparable from delivery as a breech.

It is usually recommended to turn the foetus at about the thirty-fifth week, as later attempts are more difficult, while too early an attempt is likely to be followed by recurrence. I think it wise to turn the foetus a few weeks earlier than at the recommended time, while turning is still easy. There is no harm done should recurrence of the position occur, and the version may be repeated; some of the foetuses turned will remain as vertex presentations. If version cannot be easily performed, it is wise to wait until the thirty-fifth week and then to make a more determined attempt, using a general anaesthetic if necessary.

There are many methods employed in the performance of external cephalic version, but the general principles are the same in all. Success depends upon completely disengaging the presenting part, raising it clear of the bony pelvis and making the foetus as nearly ovoid in shape as possible, by compressing and flexing it so as to bring the poles as close to one another as possible and increasing the flexion of the spine.

The method I employ is to stand on the side of the mother opposite to that to which the back points, and facing her feet. The breech is then lifted well out of the pelvis by the fingers of both hands and fixed by the ulnar surface of the right hand in the case of a left position. The left hand then pushes the head so that both the head and the trunk are

flexed. By a series of alternate taps and pushes on the breech and head, the child is gradually guided into a transverse position. A slight impulse is then all that is necessary to complete the version. A large folded towel is then applied to each side of the uterus and a tight binder is applied. The patient should be kept in bed until the head is definitely fixed over the brim of the pelvis.

If it is difficult to make the breech clear the bony pelvis on account of its being caught in the brim of the pelvis, it may sometimes be made to clear by introducing two fingers into the vagina and pushing the breech up and to one side.

If version is difficult, an anaesthetic may be necessary. In some difficult cases a see-saw wedging movement, pressure being applied with the ulnar surfaces of each hand alternately, may succeed. If version fails in this manner, an attempt should be made to turn the foetus in the opposite direction, that is, with the occiput leading. This has the theoretical advantage that the back of the child passes over the brim of the pelvis and there is less risk of prolapse of the cord. Proper compression of the foetal poles will prevent any risk of undoing flexion.

Should version fail, one will sometimes receive a pleasant surprise in that the stimulus given to the foetus may cause spontaneous version within the next few days.

When version has succeeded, make another examination after the head is definitely established over the brim, and if the position is occipito-posterior, apply pads to induce rotation.

The causes of failure are frank breech, in which the legs prevent the foetus being compressed into an ovoid, tumours of the uterus, cervix, or pelvic organs, excessive liquor, deficient liquor, or the child being too mature or too deeply engaged in the pelvis.

Should version fail, it is wise in the case of a *primipara* to make an X ray examination. This will disclose a frank breech. If the legs lie close together, it is usually impossible to turn the foetus, but if they are far apart, another attempt may be made after trying to separate the legs still more.

#### *Results of External Version.*

Among ninety-one cases in which version was attempted, it was successful in thirty-eight of forty-seven *primiparae* and forty-two of forty-four *multiparae*. Seventy-six of the babies from the eighty successful versions left hospital alive and well, and four were still-born, a foetal mortality of 5%.

In three of the eleven cases in which version failed and in which delivery was by the breech, three babies died at or soon after birth.

In one of the above successful cases movements ceased immediately after version and the woman was delivered of a macerated foetus a fortnight later. In this case the death of the foetus can fairly be ascribed to version. In no case was there prolapse

of the cord or limbs. One mother in this group died of sepsis.

During the same period one hundred consecutive breech deliveries had nineteen still-births and twelve neonatal deaths, a total foetal mortality of 31%.

In both the above groups twins are omitted, as version is obviously impracticable. Premature births and macerated foetuses are included in both groups.

#### *Contraindications to External Version.*

*Ante partum* haemorrhage of either type is a contraindication to external version. In *placenta praevia* the pelvic presentation is an advantage and in accidental detachment of the placenta it would be dangerous to perform the necessary manipulations. Fibroids are also a contraindication. In contracted pelvis version is indicated, if easily accomplished, as the head is a better pelvimeter than the breech.

#### *Cæsarean Section.*

In the first place any of the conditions that warrant the use of Cæsarean section in vertex presentations may occur in breech presentations, and the indications for operation are obviously identical and independent of the presentation. But there are also some cases in which the fact that the child is presenting as a breech is in itself an indication for performing Cæsarean section. If external version fails in the case of an elderly *primipara*, and a living child is desired, such can be assured by operation and by no other means. If there have been previous difficult deliveries resulting in still-births, and attempts at version fail, Cæsarean section is the best line of treatment. Failure to turn the foetus in a *primipara* of any age raises the question, and it must be decided according to the size of the child and the wishes of the parents. I feel that in the past I have not operated as often as I should in cases in which version has failed, and I intend to extend my indications to comply with the above indications.

#### *Induction of Labour.*

Induction of labour is sometimes advocated in breech presentations, but I do not think that there are any logical grounds for its adoption. It is true that the child will be smaller, but the *post mortem* reports of Holland and others prove that prematurity in itself increases the risk of intracranial trauma, the *tentorium cerebelli* of premature infants being especially liable to injury by quite small stresses. I refer, of course, to induction between viability and term. Definite postmaturity adds considerably to the difficulties of delivery, and I recommend that in breech presentations labour should be induced by drugs seven to ten days after calculated term, if the height of the fundus and abdominal palpation of the child confirm the diagnosis of postmaturity.

#### *Conclusions.*

1. The incidence of breech deliveries and the appalling still-birth and neonatal death rate result

in a loss of infant life that calls for our anxious and serious consideration.

2. The maternal results are less favourable than in vertex deliveries, and there are increased risk of infection and a greater incidence of gross mechanical lesions, causing more or less chronic invalidism and necessitating surgical operations at a later date.

3. Skilled delivery is capable of greatly reducing the bad results to both child and mother, but the necessary skill to obtain such good results can be purchased only at a high price.

4. The results obtained by external version performed at the appropriate time improve the statistics to a very great extent, and external version should be attempted in all cases.

5. Cæsarean section has a small but definite place in the treatment of breech presentations. It is unfortunate that the frank breeches which cause most of the failures in turning are those that cause great difficulties and dangers during birth. It is among these that most of the justifiable Cæsarean sections fall.

#### MANAGEMENT OF BREECH DELIVERY.<sup>1</sup>

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An investigation of a series of one hundred breech births, which occurred at the Royal Hospital for Women, Paddington, between May, 1928, and December, 1931, after exclusion of cases of *placenta prævia* and twin pregnancy, gave the following results.

Fifty-two patients were *primigravidæ*.

Twenty infants were still-born; six being macerated.

Twenty-nine were cases of frank breech, and six were footling presentations.

In fifteen patients the fetal arms were extended and had to be brought down.

Five of the patients had a complete tear of the perineum, and in nineteen there was a second degree tear.

In twenty-two patients the temperature rose and remained above 37.8° C. (100° F.) for over twenty-four hours during some portion of the puerperium.

There was one case of prolapsed cord.

In two patients there was malrotation of the aftercoming head.

These figures confirm certain well-known facts concerning breech births. The infantile mortality rate is always high and the percentage of cases with perineal laceration and fever during the puerperium is also high. As there is no record of *post mortem* examinations on the still-born infants, one cannot give the actual cause of death; but it is generally recognized now that over 70% of still-born

infants from breech birth show intracranial damage. Apart from death, the foetus runs the risk of serious injury, such as fracture of the skull, thigh, humerus or clavicle, Erb's paralysis, or rupture of the liver. Probably some cases of spastic paralysis also are due to intracranial damage which has not been severe enough to cause death.

Meddlesome interference with the normal processes of labour produces serious results in vertex presentations, but generally the consequences of such interference are more disastrous for both mother and child in breech labour. On the other hand, manual aid is frequently necessary for the delivery of some portion of the child in breech birth; and at times all the art and ingenuity of a skilled obstetrician are taxed to the utmost, in endeavouring to accomplish the successful delivery of a living child, without injuring the mother. De Lee states:

The complete extraction of the breech, if properly executed, is one of the most brilliant operations, and if the complications are successfully mastered without injury to mother or child, it takes rank with the technically most difficult of all surgery.

And yet we sometimes expect the merest tiro in obstetrics to conduct these cases successfully.

Most obstetricians endeavour to change the presentation at a suitable time, when recognized before labour; but owing either to failure in diagnosing the presentation, or in accomplishing version, breech labours are still quite frequent. Indeed, a few obstetricians prefer them, as a breech labour without complications is less painful for the mother than is a vertex. Where certain complications, such as *placenta prævia* or hydrocephalus, are present, breech presentations are preferable, as being more favourable for mother or child.

Before dealing with some of the complications of breech birth, I should like to stress the importance of endeavouring to ascertain the probable cause of the presentation, as the fact of its being a breech may prove to be the minor abnormality.

Disproportion is difficult to diagnose when the breech presents and is apt, therefore, to be overlooked. Where considerable disproportion is present and version has failed, Cæsarean section is the only sure way of getting a living child. The majority of breech labours end without any interference whatever. It is impossible, however, to tell beforehand whether interference will be necessary, hence one must always be prepared, firstly, by conducting the labour with the patient in the dorsal position, the position in which manual or instrumental aid can be given to the best advantage in the latter part of the second stage, and secondly, by having ready beforehand all instruments that may be required for delivery, perineotomy, perineal repair *et cetera*.

During the first stage, the patient should be in bed, to preserve the membranes as long as possible. When dilatation is slow and the membranes threaten to rupture early, some authorities advise the insertion of a large size de Ribes's bag, which tends to prevent rupture of the membranes and, at the same time, favours dilatation of the passages. After

<sup>1</sup> Read at a meeting of the New South Wales Branch of the British Medical Association on September 29, 1932.

rupture of the membranes a vaginal examination should be made to determine the presence or otherwise of prolapsed cord.

With regard to dilatation of the passages, any attempt to push or pull the breech through a cervix not fully dilated will hinder and not help delivery. In the case of the perineum and vagina, what Whitridge Williams calls an "ironing out" process of these parts should be done before delivery when extraction is likely to be difficult. In some cases this "ironing out" process may be combined with episiotomy.

Generally speaking we assist delivery in any presentation, either because the patient is unable to deliver herself, or because the life of mother or child would be endangered by delay in so doing. In breech labour it is quite usual to have to deliver the head, even in a normal case, and usually the greater the difficulty there has been in delivering the breech or shoulders, the greater the difficulty there will be in delivering the head. Obstetricians are beginning to realize more and more that still-births are more often due to rapid than slow delivery of the head, as intracranial damage is so often caused by the rapid passage of the unmoulded head through the pelvis. Hence in delivering the aftercoming head we must steer a middle course between a delivery so rapid that intracranial damage will result, and so slow that the child will be asphyxiated by being left too long in the passages after the placental circulation has ceased. We know from observation of cases of scopolamine morphine anaesthesia, that pulmonary respiration may not begin for as long as twenty minutes after birth, and yet the child may survive. Hence, the mere cessation of the placental circulation will not of itself cause the death of the foetus for a considerable time. Nevertheless, we must remember that inhalation asphyxia is a very real cause of death of the foetus, and after breech birth, whenever the child is born in a condition of asphyxia, the removal of mucus from the respiratory passages is the first step to be taken in attempting resuscitation. In delivering the head, it is often possible to bring the mouth of the child into such a position that it can breathe before the head is actually delivered. J. Shirley Calcutt, in a letter to *The British Medical Journal* (May 28, 1932, page 1011) mentions a remarkable case in which, after the birth of the trunk and before delivery of the head, a Sim's speculum was inserted along the posterior vaginal wall to the bridge of the child's nose, and after mucus was cleared away, respiration commenced and the child survived, although the head was not delivered for another twenty-five minutes.

De Lee mentions a case in which a courageous doctor actually performed tracheotomy on a child before the head was delivered. However, the child is more likely to be born alive if the head is slowly and carefully delivered than if forcibly extracted in the shortest possible time. Episiotomy done on the side on which the occiput is coming down, or in some cases on both sides, will lessen pressure on

the head and may be done with advantage in certain cases. Of the different methods of delivering the head there is no need to say much, except to repeat that there is danger in too much haste in any method, and the method which maintains the greatest flexion of the head is the best. Probably suprapubic pressure combined with traction or the Prague method is the best in *multiparae* and a modification of Smellie's method in *primiparae*. R. C. Buist, in a recent letter to *The British Medical Journal* (April 2, 1932, page 632) strongly condemns the introduction of the finger or fingers into the child's mouth and advocates the method whereby traction is used by placing the fingers in the incisor fossæ as being safer and mechanically more advantageous. The aftercoming head can be safely and satisfactorily delivered with forceps, but owing to the efficacy of other methods and the slight delay occasioned by the application of forceps, they are seldom required.

#### Arrest of the Breech at the Pelvic Brim.

When the breech is arrested at the brim of the pelvis, one must first of all be sure that there is no disproportion. The breech, even in a *primipara*, does not usually become fixed until labour begins, or may be until labour is well advanced, particularly if the presentation is a complete breech. The frank breech is more often arrested after engagement, as it is a better dilator than the complete breech. When the presenting part does not fix before labour, the first stage is apt to be slow, because of the absence of several factors, such as a certain amount of preliminary stretching of the cervix, upper part of the vagina and tissues in the bases of the broad ligaments. Moreover, the innervation of the uterus is apt to be defective when the presenting part does not become fixed early, as is often the case in occipito-posterior positions and, in addition, the membranes usually rupture too soon. Hence, one must not diagnose disproportion merely because of late descent of the breech.

If the presentation is a frank breech and the progress of labour delayed, it is advisable to get one or both legs down early and after bringing them down, instead of leaving them extended at hip and knee, some authorities advise flexing them again as they should be in the normal foetal attitude. The dilatation of the passages produced by the passage of a complete breech, when the foetus is in the normal attitude, is greater than that produced by a frank breech. I believe, also, that there is less tendency for upward extension of the arms in such cases, not only because of the greater dilatation, but because, when the head, trunk and legs of the foetus are well flexed, it is hardly possible for the arms to be extended.

#### Arrest of the Breech in the Pelvis.

When the breech is arrested in the pelvis, the treatment again is to bring down a leg, preferably the anterior one. If the presentation is a complete breech, this is not difficult and there would, of course, be no advantage in flexing the leg again

after bringing it down. If the presentation is a frank breech, one can usually disengage the foetus sufficiently to enable one to bring down a leg, but if this proves impossible, the case will have to be treated on the same lines as breech arrested on the perineum.

#### **Arrest of the Breech on the Perineum.**

When the breech is impacted in the pelvic cavity, the legs may or may not be extended, but the presentation is more often a frank breech. In such cases the breech may be well down in the pelvis and presenting at the vulva, but further progress is arrested. The impaction may, of course, be due to disproportion as well as extended legs. The treatment of these cases may prove to be very difficult. It is advisable to try to get down a leg with the patient under deep anaesthesia and after attempting to push the breech back. If this fails, one must try traction with the fingers first in the anterior groin and then in the posterior, or in both groins. But one usually finds that the fingers are useless in these cases and, personally, I have found traction by means of a fillet quite satisfactory, although this method is condemned by some obstetricians as being difficult of application and dangerous on account of the risk of injury to the foetus, fracture of the thigh being a not uncommon sequel to its use. Failing delivery by one or other of these methods, one is left with the delivery by means of the breech hook, which should be used only on a dead foetus, or the operation of embryotomy. Possibly pubiotomy might expedite delivery, but as the chances of securing a living child would be very remote, this operation is contraindicated.

It is important to assist delivery in all difficult breech births by suprapubic pressure. This helps also in keeping the head and spine flexed and, therefore, tends to prevent another troublesome complication, namely, upward extension of the arms. Excessive suprapubic pressure, however, has been known to produce herniation of the medulla into the *foramen magnum* with death of the foetus.

#### **Upward Extension of the Arms.**

There is no doubt that upward extension of the arms is one of the most serious complications of breech labour. The manipulations necessary to bring down the arms is frequently the cause of severe perineal lacerations, considerably increases the risks of sepsis, and may result in injury to the arms. Extension of the arms is generally considered to be due to pulling on the legs or trunk before the passages have been sufficiently dilated, and no doubt this is one of the causes. It has been shown by X ray examination, however, that extension of the arms is not uncommon before labour, and I have mentioned before, that, when the arms are extended, the head is necessarily extended also. It is difficult to raise one's arms above the head when the head and spine are flexed. Hence, by keeping the head well flexed, by pressure on the fundus during delivery, we will tend to prevent upward extension of the arms. In a complete breech, when the hip and knee are flexed, the spine is also flexed. If

we pull down the leg, we extend the foetal spine and so favour extension of the arms. If, in addition to pulling down the legs, we apply traction to them, we are sure to cause greater extension of the arms, because, being already slightly extended, they will be swept above the head by the pelvic brim. In a frank breech there will be a greater tendency for extension of the arms, for several reasons. Firstly, the feet in front of the head will tend to keep the head extended and will also favour extension of the arms. Secondly, owing to the pull of the hamstrings on the *tuber ischii*, the foetal spine will be tilted backwards, in other words extended, and so again upward extension of the arms will be more likely to occur. The dilatation of the passages produced by the frank breech may be insufficient for the passage of the shoulders and so the arms may be swept above the head as descent occurs.

It has been frequently asserted that the principal reason why the frank breech is more unfavourable than the complete breech is that the legs act as a splint to the body and so tend to prevent lateral flexion of the trunk; but another equally important objection is that it is so frequently associated with extended arms. Further, where the feet are in front of the head, they not only tend to extend the head, but they prevent the engagement of the aftercoming head. The bringing down of a leg early in labour, therefore, will help to prevent several important complications.

#### **Bringing Down Extended Arms.**

If the child is small and the shoulders have come well down, the bringing down of extended arms is not difficult; but when there is disproportion or insufficient dilatation, and the arrest occurs high up in the pelvis, then the whole hand has to be introduced alongside the child before the arm can be reached, and severe laceration of the perineum frequently occurs. Complete tears of the perineum may be produced; and a bilateral episiotomy may be done to advantage before an attempt is made to bring down the arms. The method of bringing down the arms is adequately dealt with in text books; but there is one point that is not often mentioned, and that is that we can often bring the arm within reach by pressing the scapula inwards towards the foetal spine. We can then pass the fingers along the posterior arm to the elbow and sweep it across the child's face. Sometimes the anterior arm can be brought down without rotating the trunk, but usually it must be rotated so as to bring the anterior arm round to a position opposite the sciatic notch. This rotation should be made so that the trunk undergoes the shortest possible rotation, thus keeping the occiput anterior. There is a slight risk of causing dorsal displacement of the arm in rotating in this manner, but this can be prevented by keeping two fingers behind the arm. It is owing to this risk that so many authorities advise rotation in the opposite direction; but then the rotation has to be made through three quarters of a circle, and there is a danger of injuring the child's neck, and there is the added disadvantage of bringing the

occiput to the back, so that the head must be rotated again after the arms are delivered. Prevention is better than cure, and I repeat that we can lessen the number of cases of extended arms by paying more attention to the maintenance of the normal foetal attitude during delivery.

#### **Malrotation of the Aftercoming Head.**

Abnormal rotation of the back is rare, and where it occurs is generally due to meddlesome interference with the normal mechanism, as by premature traction on the trunk, particularly in sacro-posterior cases.

In sacro-posterior positions there are two varieties of mechanism.

1. Where the bitrochanteric diameter enters in one oblique diameter, the shoulders usually enter in the opposite oblique. The explanation for this is that the convex foetal trunk rotates away from the convex maternal spine. In these cases the external rotation of the buttocks is in the same direction as the internal rotation, and then the occiput enters the pelvis in front of the transverse diameter and finally comes to the front.

2. The shoulders enter the pelvis in the same oblique diameter through which the bitrochanteric diameter passed and the occiput then enters the pelvis behind the transverse diameter. If the head is well flexed, however, the occiput will rotate to the front. In rare cases, particularly when the head is not flexed, the occiput may rotate into the hollow of the sacrum. Manual aid is generally required when the back does not rotate to the front, although if the child is small and the head flexed, natural delivery may occur. When the head is extended and malrotated, the chin may be held up by the pubic ramus, and artificial aid is always required. If the head cannot be flexed by suprapubic pressure, the body of the child must be lifted forwards, and by passing two fingers of one hand over the shoulders, as one does in the Prague method, the head is delivered by causing it to rotate so that first the occiput, then the vertex and lastly the forehead are made to pass over the perineum. In these cases, however, the child should be alive or have a reasonable chance of survival, otherwise the head should be perforated to save the inevitable laceration of the perineum. When the head is malrotated, but remains flexed, it is delivered by swinging the body backwards over the sacrum.

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#### **ON THE DISTRIBUTION OF RADIATION INTENSITY AROUND DIFFERENT FORMS OF RADIUM APPLICATORS.<sup>1</sup>**

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By W. H. LOVE, B.Sc., Ph.D.  
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THIS investigation was made as a result of certain discussions which transpired at the Third Australian Cancer Conference, and is concerned with the distribu-

tion of radiation intensity around various forms of radium applicators, namely, the needle, the ring, the double ring and the plate.

A review of the literature relating to this aspect of radium therapy shows that we are almost entirely ignorant of the intensity at different points in an irradiated tissue.

The intensity curves for the radium needle embedded in living tissues have been theoretically investigated by Sievert.<sup>(1)</sup> This investigator based his calculations on a consideration of the effect produced on the intensity by : (i) the operation of the inverse square law, and (ii) the absorption in the tissues and in the walls of the needle. My investigations have shown that, for other forms of applicators, a consideration of the effects of absorption involves a very complex analysis.

The screenage usually employed in the radium needle is such that it stops the primary  $\beta$  radiation, but exerts very little influence on the intensity of the  $\gamma$  rays. The variations in the intensity of the radiation at different distances from such active sources, embedded in tissue, are due almost entirely to the operation of the inverse square law. In this regard we may note that Mayneord<sup>(2)</sup> and others, working with small ionization chambers, found that at distances greater than the active length of the radium needle, the intensities fit in approximately with the inverse square law.

In the following calculations the effect of absorption has not been considered, and the extent of the error thus introduced can be judged by comparing the results for the radium needle with those obtained by Sievert.

#### **The Radium Needle or Radon Seed.**

Let AB (Figure I) represent a linear source along which the radium or radon is uniformly distributed. If  $\rho$  is the density of radium or radon per unit length,  $2l$  the length of the source, P any point whose perpendicular distance from the source is  $x$ ,  $\theta_1$  and  $\theta_2$  the angles PAB and PBA respectively, and  $a$  the distance

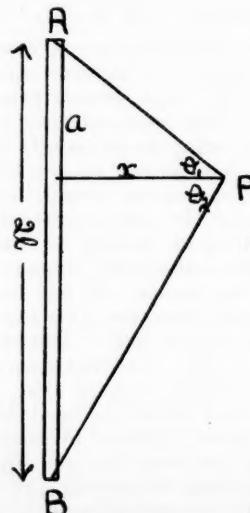


FIGURE I

<sup>1</sup>This work was carried out under the control of the Cancer Research Committee of the University of Sydney and with the aid of the Cancer Research and Treatment Fund.

AQ, then, if we neglect the effect of absorption, it can be shown that the intensity at P is given by :

$$I = K \frac{\rho}{x} (\theta_1 + \theta_2)$$

where K is the intensity at one centimetre distance from a point source of one milligramme of radium or one millicurie of radon. If K be chosen as the unit of intensity the formula reduces to :

$$I = \rho/x (\theta_1 + \theta_2) \\ = \rho/x \left( \tan^{-1} \frac{a}{x} + \tan^{-1} \frac{2l-a}{x} \right)$$

If  $I_1$ ,  $I_2$ ,  $I_3$  and  $I_4$  represent the intensity at P according as to whether P lies on CC, DD, BB, or BE (Figure II) we may write :

$$I_1 = \frac{2\rho}{x} \tan^{-1} \frac{1}{x} \\ I_2 = \frac{\rho}{x} \left\{ \tan^{-1} \frac{3l}{2x} + \tan^{-1} \frac{1}{2x} \right\} \\ I_3 = \frac{\rho}{x} \tan^{-1} \frac{2l}{x} \\ I_4 = \rho \frac{2l}{x(x+2l)}$$

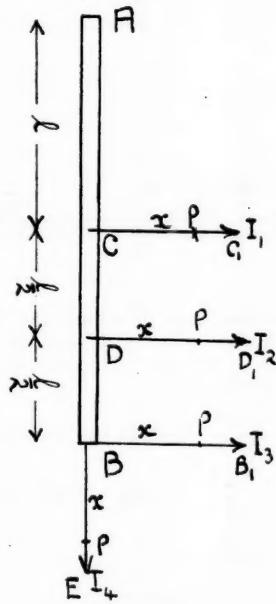


FIGURE II.

For a radium needle of one centimetre active length and containing one milligramme of radium (or one millicurie of radon) we have<sup>1</sup>:

$$I_1 = \frac{2}{x} \tan^{-1} \frac{1}{2x} \\ I_2 = \frac{\rho}{x} \left\{ \tan^{-1} \frac{3}{4x} + \tan^{-1} \frac{1}{4x} \right\} \\ I_3 = \frac{1}{x} \tan^{-1} \frac{1}{x} \\ I_4 = \frac{1}{x(x+1)}$$

If the intensities are calculated for different values of x, the following table may be constructed. The figures shown in brackets were obtained by Sievert.

TABLE I.

x. (in mms.).	$\frac{1}{2}$	1	2	3	5	10	20
$I_1$	57.2	27.3 (24.9)	11.8 (10.6)	6.9	3.2 (2.8)	0.92 (0.80)	0.24 (0.20)
$I_2$	57.2	26.0	11.6	6.3	2.9	0.89	0.24
$I_3$	30.6	14.5 (12.9)	6.8 (5.9)	4.3	2.2 (1.9)	0.78 (0.67)	0.23 (0.19)
$I_4$	19.1	9.1	4.1	2.5	1.3	0.5	0.16

These results have been represented graphically in Figure III and the isodose curves in the plane, containing the axis of the radium needle, have been partly constructed in Figure IV. The isodose curves in any plane at right angles to the axis of the needle form a system of concentric circles.

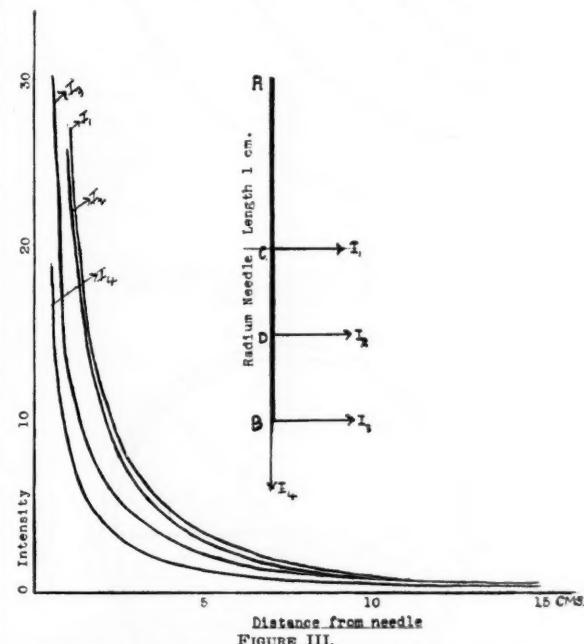


FIGURE III.

Showing intensity curves for a radium needle one centimetre long and containing one milligramme of radium or one millicurie of radon.

#### The Circular Ring of Radium or Radon.

Let us consider a circular ring of radium or radon of radius r (Figure V). If  $\rho$  is the density of radium or radon per unit length, I the intensity at any point P in the plane of the ring, x the distance of P from the centre, then it can be easily shown that for points inside the ring:

$$I = \frac{2\pi r}{r^2 - x^2} \rho$$

and for points outside the ring:

$$I = \frac{2\pi r}{x^2 - r^2} \rho.$$

<sup>1</sup> No correction has been applied for the absorption of the gamma rays in the radium.

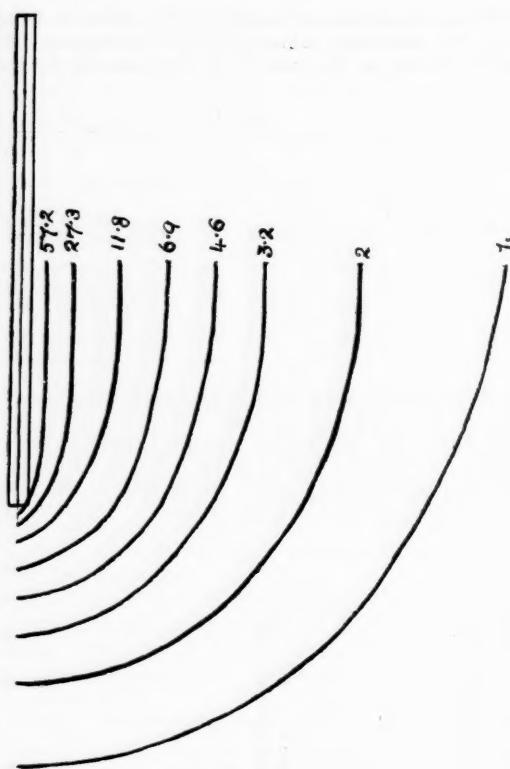


FIGURE IV.

Showing iso-dose curves for radium needle one centimetre long and containing one milligramme of radium or one millicurie of radon.

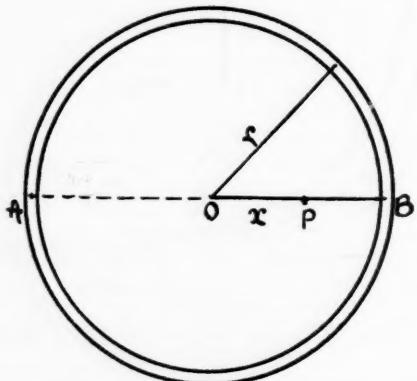


FIGURE V.

If the point P is above the plane of the ring as shown in Figure VI, then we have :

$$I = \frac{2\pi r\rho}{AP \cdot PB}$$

If the intensity at P be represented by  $I_2$ ,  $I_3$  and  $I_4$  according as to whether P lies vertically above the point O, E or A, E being the mid-point of OA (Figure VII), we may write :

$$I_2 = \frac{2\pi r\rho}{x^2 + r^2}$$

$$I_3 = \frac{2\pi r\rho}{\sqrt{x^2 + r^2/4}} \quad \frac{2\pi r\rho}{\sqrt{x^2 + 9/4r^2}}$$

$$I_4 = \frac{2\pi r\rho}{x\sqrt{x^2 + 4r^2}}$$

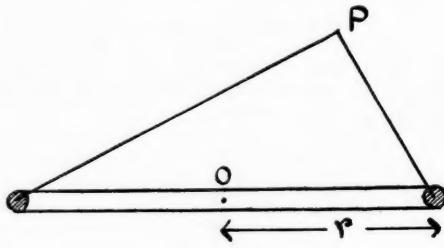


FIGURE VI.

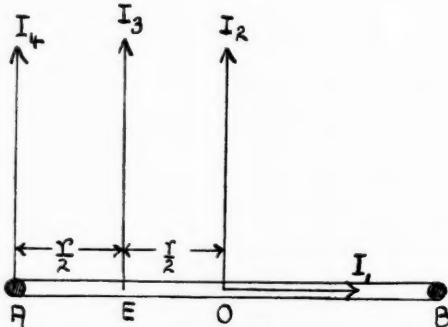


FIGURE VII.

For the circular ring in which the radius is one centimetre and the density of radium or radon is one milligramme or one millicurie per centimetre length we find that :

$$I_1 = \frac{2\pi}{1-x^2} \text{ (points inside ring)}$$

$$I_2 = \frac{2\pi}{x^2-1} \text{ (points outside ring)}$$

$$I_3 = \frac{2\pi}{1+x^2}$$

$$I_4 = \frac{2\pi}{\sqrt{x^2+1/4}} \quad \frac{2\pi}{\sqrt{x^2+9/4}}$$

$$I_4 = \frac{2\pi}{x\sqrt{4+x^2}}$$

These results are represented graphically in Figure VIII and the isodose curves in the plane normal to the plane of the ring and passing through the centre of the ring are partly shown in Figure IX. It is obvious that the isodose curves in the plane of the ring form a system of concentric circles.

#### The Double Ring of Radium or Radon.

Consider a double ring (Figure X) in which the radii are  $r_1$  and  $r_2$  and the density of radium or radon is  $\rho$  per centimetre.

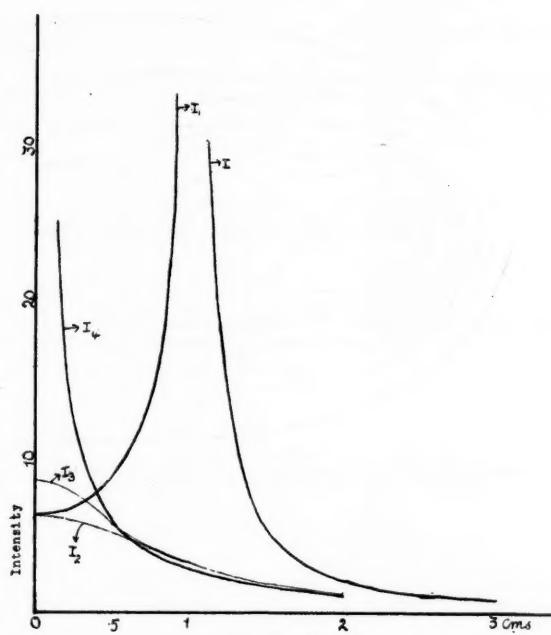


FIGURE VIII.

Showing intensity-distance curves for radium ring, one centimetre radius and containing one milligramme of radium or one millicurie of radon per centimetre circumference.

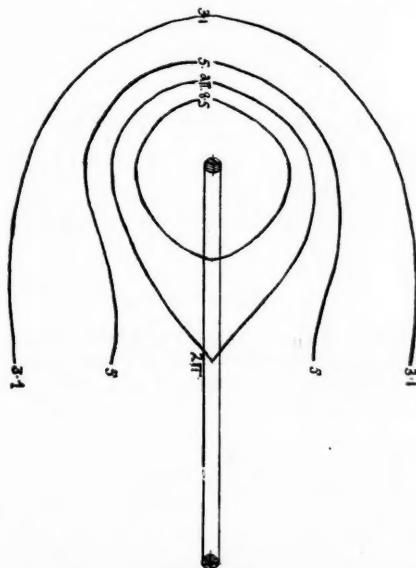


FIGURE IX.

Showing iso-dose curves for radium ring (Figure VIII) in plane normal to ring and passing through the centre.

If P is any point in the plane of the ring whose distance from the centre O is x, and if the intensity at P is represented by  $I_4$ ,  $I_5$  and  $I_6$  according as to whether P lies within the smaller ring, between the two rings, or outside the rings, then we have :

$$I_4 = \frac{2\pi r_1 \rho}{r_1^2 - x^2} + \frac{2\pi r_2 \rho}{r_2^2 - x^2}$$

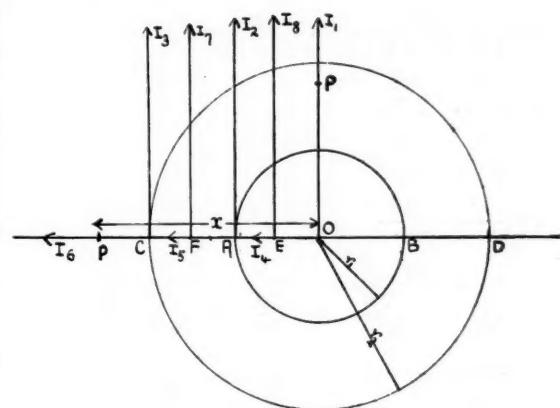


FIGURE X.

$$I_5 = \frac{2\pi r_1 \rho}{x^2 - r_1^2} + \frac{2\pi r_2 \rho}{r_2^2 - x^2}$$

$$I_6 = \frac{2\pi r_1 \rho}{x^2 - r_1^2} + \frac{2\pi r_2 \rho}{x^2 - r_2^2}$$

If now P is any point whose vertical distance above the plane of the ring is x and if the intensity at P is represented by  $I_1$ ,  $I_2$ ,  $I_3$ ,  $I_4$ , and  $I_8$  according as to whether P lies vertically above the point O, A, C, F or E, F being the mid-point of AC and E the mid-point of OA, then we may write :

$$I_1 = \frac{2\pi r_1 \rho}{x^2 + r_1^2} + \frac{2\pi r_2 \rho}{x^2 + r_2^2}$$

$$I_2 = \frac{2\pi r_1 \rho}{x \sqrt{x^2 + 4r_1^2}} + \frac{2\pi r_2 \rho}{\sqrt{x^2 + (r_2 - r_1)^2} \sqrt{x^2 + (r_2 + r_1)^2}}$$

$$I_3 = \frac{2\pi r_1 \rho}{\sqrt{x^2 + (r_2 - r_1)^2}} \frac{2\pi r_2 \rho}{\sqrt{x^2 + (r_2 + r_1)^2}} + \frac{2\pi r_2 \rho}{x \sqrt{x^2 + 4r_2^2}}$$

$$I_7 = \frac{2\pi r_1 \rho}{\sqrt{x^2 + \left(\frac{r_2 - r_1}{2}\right)^2}} \frac{2\pi r_2 \rho}{\sqrt{x^2 + \left(\frac{3r_1 + r_2}{2}\right)^2}} +$$

$$\frac{2\pi r_2 \rho}{\sqrt{x^2 + \left(\frac{r_2 - r_1}{2}\right)^2}} \frac{2\pi r_2 \rho}{\sqrt{x^2 + \left(\frac{3r_2 + r_1}{2}\right)^2}}$$

$$I_8 = \frac{2\pi r_1 \rho}{\sqrt{x^2 + \frac{r_1^2}{4}}} \frac{2\pi r_2 \rho}{\sqrt{x^2 + \frac{9r_1^2}{4}}} +$$

$$\frac{2\pi r_2 \rho}{\sqrt{x^2 + \left(\frac{2r_2 - r_1}{2}\right)^2}} \frac{2\pi r_2 \rho}{\sqrt{x^2 + \left(\frac{2r_2 + r_1}{2}\right)^2}}$$

If we now apply these formulæ to a double ring in which the radii are one and two centimetres respectively, and the density of radium or radon is one milligramme or one millicurie per centimetre, we get :

$$I_1 = \frac{2\pi}{1+x^2} + \frac{4\pi}{4+x^2}$$

$$I_2 = \frac{2\pi}{x \sqrt{4+x^2}} + \frac{4\pi}{\sqrt{1+x^2} \sqrt{9+x^2}}$$

$$I_3 = \frac{2\pi}{\sqrt{1+x^2}} \frac{\sqrt{9+x^2}}{\sqrt{16+x^2}} + \frac{4\pi}{x\sqrt{16+x^2}}$$

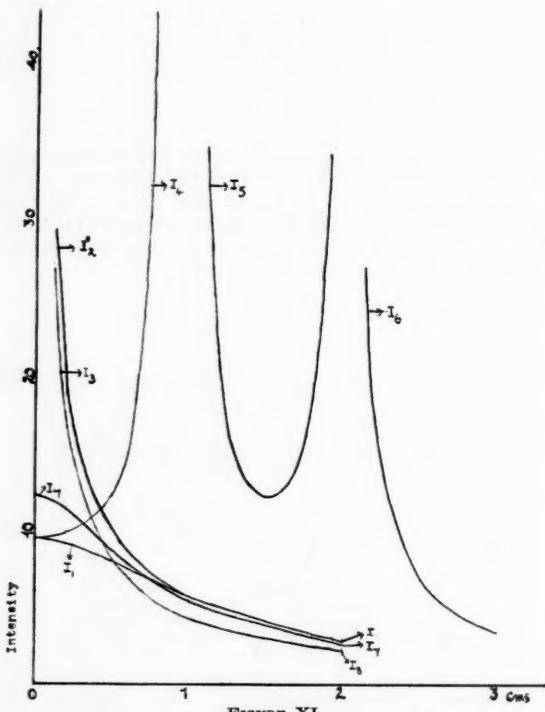
$$I_4 = \frac{2\pi}{1-x^2} + \frac{4\pi}{4-x^2}$$

$$I_5 = \frac{2\pi}{x^2 - 1} + \frac{4\pi}{4 - x^2}$$

$$I_8 = \frac{2\pi}{x^2 - 1} + \frac{4\pi}{x^2 - 4}$$

$$I_7 = \frac{2\pi}{\sqrt{\frac{1}{4}+x^2}} \sqrt{\frac{25}{4}+x^2} + \frac{4\pi}{\sqrt{\frac{1}{4}+x^2}} \sqrt{\frac{49}{4}+x^2}$$

$$I_8 = \frac{2\pi}{\sqrt{\frac{1}{4}+x^2}} \sqrt{\frac{9}{4}+x^2} + \frac{4\pi}{\sqrt{\frac{9}{4}+x^2}} \sqrt{\frac{25}{4}+x^2}$$



**FIGURE XI.**

Showing intensity-distance curves for double ring, radii one and two centimetres and containing one milligramme of radium or one millicurie radon per centimetre.

These calculations have been made for different values of  $X$ , and the results have been represented graphically in Figure XI, and the isodose curves in the plane normal to the plane of the double ring and passing through the centre of the ring are partly shown in Figure XII. It is obvious that the isodose curves, in the plane of the ring, form a system of concentric circles.

### The Circular Plate.

Consider a circular plate of radium, in which the radius is  $r$  centimetres, and the density of radium is one milligramme per square centimetre.

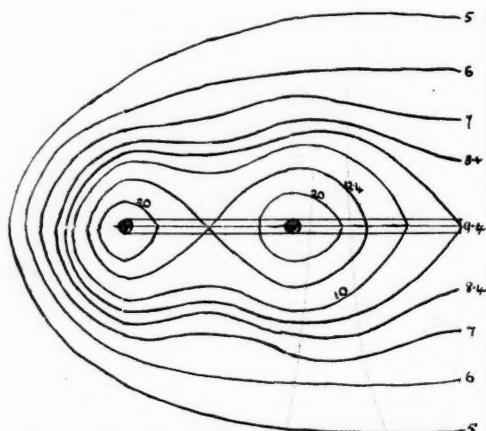


FIGURE XII.  
Showing curves for double ring (Figure XI) in plane normal to ring and passing through the centre.

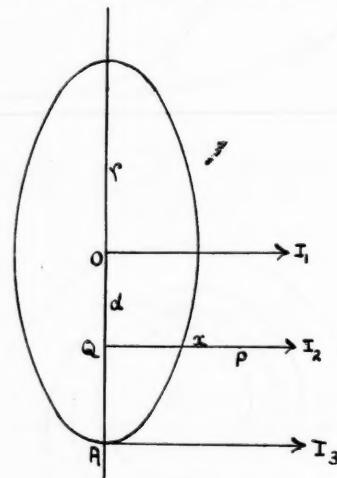


FIGURE XIII.

If Q (Figure XIII) is any point whose distance from the centre of the plate is  $d$ , and P any point whose perpendicular distance above Q is  $x$ , then it can be shown that the intensity at P is given by :

$$\begin{aligned} I &= 2\rho\pi \int_0^r \frac{r dr}{\sqrt{(r^2+x^2-d^2)^2+(2xd)^2}} \\ &= \pi\rho \left\{ \sin^{-1} \frac{r^2+x^2-d^2}{2xd} - \sin^{-1} \frac{x^2-d^2}{2xd} \right\} \\ &= \pi\rho \log \left\{ \frac{(r^2+x^2-d^2)+\sqrt{(r^2+x^2+d^2)^2+4x^2d^2}}{(x^2-d^2)+\sqrt{(x^2-d^2)^2+4x^2d^2}} \right\} \end{aligned}$$

If  $d=0$ , this reduces to:

$$I = \pi \rho \log \frac{r^2 + x^2}{x^2}$$

and if  $x$  is large in comparison with  $r$ , we get :

$$I = \frac{\pi r^2 \rho}{x^2}$$

and we have the equivalent of a point source of radium.

If  $d=r/2$  and  $I_1, I_2$  and  $I_3$  represent the intensities at points whose vertical distances above the points O, Q and A are  $x$ , we have:

$$I_1 = \pi \rho \log \frac{r^2+x^2}{x^2}$$

$$I_2 = \pi \rho \left\{ \sin h^{-1} \frac{\frac{3}{4}r^2+x^2}{rx} - \sin h^{-1} \frac{x^2-r^2/4}{rx} \right\}$$

$$I_3 = \pi \rho \left\{ \sin h^{-1} \frac{x^2}{2xr} - \sin h^{-1} \frac{x^2-r^2}{2xr} \right\}$$

If we now consider a plate of radius one centimetre containing one milligramme of radium per square centimetre, then we see that:

$$I_1 = \pi \log \frac{1+x^2}{x^2}$$

$$I_2 = \pi \left\{ \sin h^{-1} \frac{3/4+x^2}{x} - \sin h^{-1} \frac{x^2-1/4}{x} \right\}$$

$$I_3 = \pi \left\{ \sin h^{-1} \frac{x}{2} - \sin h^{-1} \frac{x^2-1}{2x} \right\}$$

These calculations have been made for different values of  $x$ , and the results are shown graphically in Figure XIV.

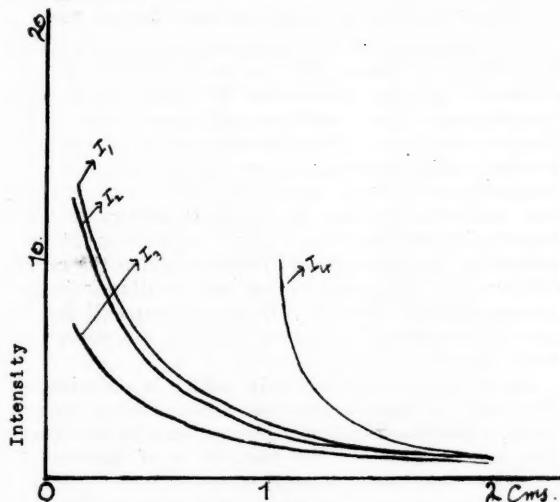


FIGURE XIV.

Showing intensity-distance curves for radium plate, radius one centimetre and containing one milligramme of radium per square centimetre.

If the point P (Figure XV) is situated in the plane of the plate and at a distance  $x$  from the centre, it can be similarly shown that we have:

$$I_4 = \pi \rho \log \frac{x^2}{x^2-r^2}$$

If, as before, the radius of the plate is one centimetre, and contains one milligramme of radium per square centimetre, this reduces to:

$$I_4 = \pi \log \frac{x^2}{x^2-1}$$

These calculations have also been made for different values of  $x$ , and the results are represented graphically in Figure XIV.

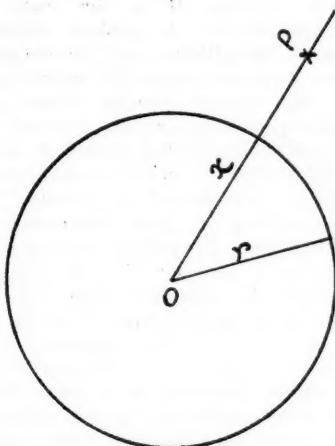


FIGURE XV.

#### Summary.

An investigation has been made of the distribution of radiation intensity in the vicinity of the radium needle, the ring, the double ring and the plate. The unit of intensity has been taken as that intensity at one centimetre distance from a point source of one milligramme of radium or one millicurie of radon, and the results of the investigation for containers of certain dimensions and activities have been represented graphically.

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- (1) R. M. Sievert: "Die  $\gamma$  Strahlungsintensität an der Oberfläche und in der Nächsten Umgebung von Radiumnadeln", *Acta Radiologica*, Volume XL, Fasciculus 3, Number 61, 1930.
- (2) W. V. Mayneord: "The Measurement in 'r' Units of the Gamma Rays from Radium", *The British Journal of Radiology*, Volume IV, Number 48, 1931, page 693.

#### THE ASCHHEIM-ZONDEK AND OTHER LABORATORY TESTS FOR PREGNANCY.

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AND

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The researches of Aschheim and Zondek<sup>(1)</sup> led them to conclude that the anterior lobe of the pituitary gland secretes two hormones which are intimately related to the functions of the ovaries. These two hormones, which they refer to collectively as prolan, or individually as prolan A and prolan B, they regard as the stimuli of ovarian activity. Prolan A induces maturation of the Graafian follicles; in the *liquor folliculi* of the mature follicles the presence of the hormone, variously called the female sex hormone, oestrin or theelin, has been

<sup>1</sup> Working under the T. E. Rose Foundation.

demonstrated. Prolan *B* is the term used to designate that factor in prolan which effects luteinization of the follicles; and the *corpus luteum* produces the hormone progestin, which causes the changes in the uterine mucosa before gestation occurs. Other investigators have failed to effect a separation of prolan *A* and prolan *B*, and incline to the belief that there is no real distinction between them. Collip<sup>(2)</sup> has found in extracts from the placenta indications of three hormones which he believed to be distinct from those already mentioned. He has now found, however, that the one which he named emmenin is identical with oestrin. The question of the hormonal control of the reproductive cycle becomes obscure in the presence of all these factors. One clear fact that emerges is that conception is rapidly followed by a great increase in the quantities of prolan in the blood and by its excretion in the urine. This is demonstrated by the injection of these fluids into immature female mice, a procedure which is followed by rapid maturation of the ovaries and precocious puberty. It is upon this fact that the Aschheim-Zondek pregnancy test is based. The technique of this test has previously been described<sup>(3)</sup> in this journal and will be referred to only briefly here. Immature female mice receive six subcutaneous injections of the urine to be tested over a period of two days. One hundred hours after the first injection the animals are killed and their ovaries examined macroscopically for the presence of haemorrhagic follicles and *corpora lutea*. The presence of these is diagnostic of pregnancy, whilst the finding of infantile ovaries rules out the possibility of pregnancy. The German authors claim an accuracy of nearly 99% in their results, which appear to be fully confirmed by workers in various parts of the world.

Many attempts have been made to reduce the time necessary for the completion of the test. Friedman<sup>(4)</sup> observed that the intravenous injection of the urine of a pregnant woman into rabbits provoked ovulation. Since ovulation occurs in the rabbit only after coitus, Friedman's observation may be used as the basis of a test for pregnancy. Thus Reinhart and Scott<sup>(5)</sup> developed a technique by which non-pregnant rabbits were isolated for a week and then injected with five to fifteen cubic centimetres of the urine of the patient in whom pregnancy was to be diagnosed. Laparotomy was performed on the animal after twenty-four hours. A positive indication of pregnancy was given by evidence of ovulation, as shown by the presence of haemorrhagic follicles in the ovaries. If there was no evidence of ovulation and mature Graafian follicles were present, a further injection of urine was given and laparotomy was again performed twenty-four to thirty-six hours later. The non-appearance of haemorrhagic follicles at this operation was considered a "negative" reaction to the pregnancy test. From a discussion of the rabbit pregnancy test by White, Severance and others,<sup>(6)</sup> it appeared that in order to attain the maximum accuracy with the test, more than one intravenous

injection were necessary, even in carefully selected animals. Also, the animal must be examined at least forty-eight hours after the first injection to exclude false "negative" reactions to the test, although, of course, earlier indications of a positive reaction may be obtained by laparotomy.

Zondek<sup>(7)</sup> has attempted to reduce the time taken by the Aschheim-Zondek test by alcohol fractionation of the urine, a procedure by which he concentrates the active principle six times. He examined the ovaries of the mice fifty-one to fifty-seven hours after the first injection. His conclusion is that a positive reaction is diagnostic of pregnancy, but that absence of reaction does not exclude pregnancy. He therefore always controls these results by carrying out the test with the ordinary technique. Eberson and Silverberg<sup>(8)</sup> also prepared by alcohol fractionation a concentrate of the active principle of the urine of pregnancy which effected maturation of the ovaries of immature rats. They performed *post mortem* examinations of the animals forty-eight hours or longer after the first injection, but in an unspecified number of cases were compelled to resort to microscopic examination of the ovaries in order to reach a conclusion from the test.

#### Clinical Application of the Aschheim-Zondek Test.

The Aschheim-Zondek test has been used in this hospital as a diagnostic aid in a variety of conditions. In this connexion 93 cases have been investigated. In addition, fifty-two tests were carried out as controls on the urine of patients known with certainty to be either pregnant or non-pregnant. Thus, in all, 145 tests were carried out, and in every case the result was correct. This remarkable accuracy leads one to place great confidence in the test. The 93 cases in which the result of the test was used as an aid to diagnosis are summarized in Table I. Most of them call for no special comment, but a few will be considered in brief detail.

There were four cases in which a provisional diagnosis of dead fetus was made. As in two of these a positive reaction occurred and in two there was no reaction to the test, it is of interest to examine them more closely.

1. Positive reaction. The patient took quinine and the gynaecologist considered that the fetus died on the day of the commencement of the test.

2. Positive reaction. At operation a living fetus was found.

3. Absence of reaction. The patient had been bleeding *per vaginam* for two months. Placental remains were reported by the pathologist examining the uterine scrapings.

4. Absence of reaction. The patient had been bleeding *per vaginam* for one month. The provisional diagnosis of dead fetus was made a few days before the test. The patient aborted a dead fetus one month later.

Aschheim<sup>(1)</sup> has pointed out that a positive reaction to the test occurs as long as the fetus lives and the chorion is in living contact with the mother's circulation. Within a few days of the death of the fetus the test fails to produce a reaction. In these four cases in which a provisional

TABLE I.

Number of Cases.	Provisional Diagnosis.	Result.		Final Diagnosis.
		Positive.	No Reaction.	
51	Suspected pregnancy	31	20	Pregnant, 31; non-pregnant, 20
11	Amenorrhoea	2	9	Pregnant, 2; non-pregnant, 9
6	Ectopic gestation	1	5	Pregnant, 1; non-pregnant, 5
4	Dysmenorrhoea	0	4	Pregnant, 0; non-pregnant, 4
4	Myoma uteri	1	3	Pregnant, 1; non-pregnant, 3
3	Obesity, ? pregnancy	1	2	Pregnant, 1; non-pregnant, 2
2	? Menopause, ? pregnancy	1	1	Pregnant, 1; non-pregnant, 1
2	Ovarian cyst	1	1	Pregnant, 1; non-pregnant, 1
1	Pseudocyesis	0	1	Pregnant, 0; non-pregnant, 1
1	Diabetes, ? pregnancy	1	0	Pregnant, 1; non-pregnant, 0
1	Menorrhagia, ? pregnancy	1	0	Pregnant, 1; non-pregnant, 0
1	? Pregnancy, ? malignant uterus	0	1	Pregnant, 0; non-pregnant, 1
1	? Pregnancy, ? chorionepithelioma	1	0	Pregnant, 1; non-pregnant, 0
4	Death of fetus	2	2	See discussion
1	Hydatidiform mole	1	0	Hydatidiform mole, 1

diagnosis of dead foetus had been made, the two positive reactions were obtained from urine passed by the patient whilst the foetus was still alive or had just died. The specimens of urine failing to give reactions were passed by the patient a considerable time after the death of the foetus.

#### The case of pseudocyesis is of interest.

The patient believed she was pregnant and consulted her physician, wishing to know the expected date of confinement. Her abdomen was much enlarged and she declared that foetal movements were violent. Milk was present in the breasts. On examination the uterus was found to be small and soft. Examination by X rays revealed no evidence of foetal parts. Examination at a later date proved that the patient was not pregnant.

One case of hydatidiform mole appears in the table. The Aschheim-Zondek test gives a positive result in cases of hydatidiform mole and chorionepithelioma, even with the use of very dilute specimens of urine. Five days after the removal of the mole the result of the test was still positive, but six weeks later there was no reaction. The test in this case is a valuable indication that a chorionepithelioma has not followed the hydatid mole.

In one case the differential diagnosis was between pregnancy and chorionepithelioma. In either condition the Aschheim-Zondek test gives a positive reaction; here the positive reaction obtained was attributed to pregnancy, which was later confirmed.

#### A Quicker Test for Pregnancy.

The Aschheim-Zondek test has the disadvantage that the result is not available until one hundred hours after the commencement of the test. With the rabbit pregnancy test the result may be read forty-eight hours or less after the test is undertaken. Here the effect of the urine injections is merely to provoke ovulation by the already mature Graafian follicles, but in the mouse maturation of the follicles must first be effected before ovulation can occur. It was therefore believed that more rapid tests would be possible by means of mice if they were used at an age nearer to puberty than had been customary. With this end in view, sections of the ovaries of a large number of mice were examined. It was found that there was no evidence of luteinization of maturing follicles before the age of thirty-six days, and even at this age it was very rarely

encountered. Macroscopically, all ovaries taken from mice up to this age appeared normally infantile. It seems permissible, then, to use animals of such an age that they shall be not older than, say, thirty-four days at the end of the test. With them, one would expect a more rapid response to the injection of the urine of pregnancy than with considerably younger animals.

Dickens<sup>(6)</sup> has shown that prolan is precipitated from urine by concentrations of alcohol above 75%. This observation has been used in concentrating the active principle in the urine during pregnancy in the following manner.

The urine, slightly acid to litmus, is mixed with three volumes of absolute alcohol and allowed to stand for thirty minutes. The mixture is centrifuged and the supernatant fluid is poured off. The precipitate is taken up in a small volume of water and the mixture is again centrifuged. The aqueous extract is found to be highly active. Usually it is convenient to take fifty to sixty cubic centimetres of urine and 150 to 180 cubic centimetres of absolute alcohol. The precipitate may be spun down in a hundred cubic centimetre centrifuge tube in three spins, the supernatant fluid being discarded each time. After the final spin the supernatant fluid is decanted off and the tube drained for a few minutes, or if the precipitate is bulky, the tube is placed in a water bath at 40° C. and exhausted for a few minutes in order to remove most of the alcohol. The precipitate is taken up with 1.5 cubic centimetres of distilled water and transferred to a 10 cubic centimetre centrifuge tube. The large centrifuge tube is washed out with three quantities of 0.7 cubic centimetre of distilled water and the washings are added to the 10 cubic centimetre centrifuge tube. After thorough mixing the insoluble portion is centrifuged out. The concentration effected by the procedure is about 15 to 1. In order that the final solution may contain as much prolan as possible, specimens of urine which are not too dilute are used. Usually the early morning specimen serves the purpose well.

Preliminary tests with the concentrates prepared in this manner showed that two injections of 0.3 to 0.4 cubic centimetre were sufficient to produce haemorrhagic follicles in the ovaries of immature

mice. Finally, the following technique was evolved and applied to a series of tests. The preparation of the concentrate from urine was commenced at 9 a.m. and was completed at 10.30 a.m. Four mice, twenty-eight to thirty days old, received two injections of 0.3 to 0.4 cubic centimetre at an interval of six hours. Fifty-five hours after the first injection, that is, at 5.30 p.m. on the third day, the ovaries of two of the mice were examined. If haemorrhagic follicles were not seen, the remaining mice were examined early in the morning of the fourth day, that is, about seventy hours after the first injection. The finding of one haemorrhagic follicle constitutes a positive reaction. In the absence of haemorrhagic follicles the result of the test is "negative".

Tests were done in this manner with sixty-five specimens of the urine of pregnancy. All but six reacted positively at 55 hours. Of the six, five reacted positively at 68 to 70 hours. The one which failed to give a positive reaction either at 55 or 70 hours was a very dilute specimen of urine passed during the afternoon and was almost colourless. This single failure of the technique serves to stress the importance of using a well-coloured early morning specimen of urine for the test. When this is done, the result of the test, if positive, is available in the great majority of cases in 55 hours, and, if no reaction occurs, in 70 hours. It is not suggested that this more rapid test should supplant the Aschheim-Zondek test. It is, however, a reliable test to use in those cases in which a quicker result is required.

#### The Rabbit Pregnancy Test.

It has been suggested that it is a matter of greater difficulty to breed a sufficient number of mice for pregnancy tests than it is to use rabbits which are examined once or twice by laparotomy and used again when they have recovered from the operations. A more real advantage of the rabbit pregnancy test is that the result is available much earlier than in tests in which immature mice or rats are used.

In order to become acquainted with the rabbit pregnancy test, fourteen rabbits were used. They were segregated for some weeks to insure that they were non-pregnant, and then received two intravenous injections of ten cubic centimetres of urine at an interval of six hours. Forty-five hours after the first injection, the animals were killed and their ovaries were examined. The ten which had been injected with the urine of pregnancy all had haemorrhagic follicles in the ovaries. The remaining four, which received injections of urine from non-pregnant women, had no haemorrhagic follicles. Thus in this small series of fourteen tests, all the rabbits gave an accurate result. In those instances in which the test is urgent, the rabbits' ovaries could be examined in twenty-four hours and a positive result would then end the test. As previously mentioned, however, the conclusion of White, Severance and others<sup>(6)</sup> is that an animal showing no reaction at twenty-four hours must always be

reexamined at forty-eight hours if "false negative" reactions are to be excluded.

#### Summary.

1. In 145 cases in which the Aschheim-Zondek test was used, the results were correct in every instance.

2. A more rapid pregnancy test, based upon the Aschheim-Zondek technique, is proposed. The time taken by the test is 55 to 70 hours.

3. Reference is made to a brief experience with the rabbit pregnancy test. Accurate results were obtained in all instances.

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- <sup>(3)</sup> G. V. Rudd: "An Examination of the Aschheim-Zondek Test for Pregnancy", *THE MEDICAL JOURNAL OF AUSTRALIA*, September 19, 1931, page 359.
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- <sup>(5)</sup> H. L. Reinhardt and E. Scott: "Modification of Aschheim-Zondek Test", *The Journal of the American Medical Association*, May 9, 1931, page 1565.
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- <sup>(7)</sup> B. Zondek: "Zur Methodik der Schwangerschaftsreaktion aus dem Harn durch Nachweis des Hypophysenvorderlappenhormons; Fällungsschnellreaktion; Entgiftung des Harns. Verbesserung der Schwangerschaftsreaktion", *Klinische Wochenschrift*, May 24, 1930, page 964.
- <sup>(8)</sup> F. Eberson and M. H. Silverberg: "Anterior Pituitary Hormone in Urine", *The Journal of the American Medical Association*, June 27, 1931, page 2176.

#### Reports of Cases.

##### TWO CASES OF LIVER ABSCESS.

By D. B. WALKER, F.R.C.S.,  
Medical Superintendent, Rockhampton Hospital,  
Queensland.

THE following cases of liver abscess appear to me to be worth recording.

##### Case I.

L.J., a male, aged twelve years, was admitted to the Rockhampton Hospital on February 15, 1932, complaining of pain below the right costal margin. His mother stated that a fortnight before admission she noticed that he was off colour—"he wanted to lie about and his appetite became poor". A week later he began to complain of occasional pain in the right hypochondriac and epigastric regions, and he became slightly yellow. The pain continued off and on for a week. "He was not ill enough to go to bed, and was able to play about with other boys." On the day of admission the pain became more severe, and he was taken to his doctor, who sent him to hospital. There had been no complaint of pain in any other part of the abdomen.

He had had diphtheria at seven months, gastritis and pneumonia about the same time. Since then he had had a cough, but no other illness. Tonsils and adenoids were removed three years ago.

On examination the patient was a normally built boy. He was bright and did not look seriously ill. There was a visible and palpable swelling in the gall-bladder region, moving freely on respiration. It was tender and felt like a distended gall-bladder. Jaundice was not present and examination of the rest of the abdomen revealed no abnormality. There was slight bronchiectasis affecting the lower lobe of the right lung. A blood count showed a polymorphonuclear leucocytosis of 20,000 per cubic millimetre. His temperature was 38.5° C. (101.4° F.). His

pulse rate was 108. As his general condition was so good, it was decided to keep him under observation, and fomenta were applied. At the end of a week he appeared to be in the same condition as on admission, and exploration was decided on.

On February 23, 1932, a vertical incision was made over the swelling. It was then seen that the liver immediately in front of the gall-bladder was swollen and inflamed and pitted on pressure. The gall-bladder and appendix were normal, and nothing abnormal was found in the rest of the abdomen. With a syringe pus was found eighteen millimetres (three-quarters of an inch) beneath the surface of the liver. A pair of sinus forceps enlarged the track, and a rubber tube was used for drainage. This was packed round with gauze and another tube was brought out through the flank, draining Morison's pouch. The abscess contained about an ounce of yellow pus. The temperature fell to normal in three days and the patient was discharged four weeks after operation. Bacteriological examination of the pus at the Commonwealth Health Laboratory revealed *Staphylococcus aureus* in pure culture.

#### Case II.

R.I., a male, aged five years, was admitted to the hospital on March 21, 1932, complaining of pain in the right hypochondrium. His mother stated that a month before admission she noticed that "he was not himself; he became yellow and went off his food". He was not kept in bed, but was running around. A week later he complained of occipital headache and pain on the right side of the abdomen. He was still yellow. He was kept at home for three weeks after the pain began and was sometimes feverish, but was never kept in bed. The pain varied in severity—"sometimes he cried with it, and at other times it did not worry him much".

He had had no previous illness. There were three other children, but there had been no sickness in the family.

I first saw him on March 30. During the nine days since admission to hospital his temperature had varied between 37.8° and 39.4° C. (100° and 103° F.). On examination he was seen to be a normally developed coloured boy. He did not look very seriously ill. There was a tender swelling in the hypochondrium, towards the flank. This was apparently in the liver, which extended 6.75 centimetres (two and a half inches) below the costal margin at this part. There was no jaundice. A blood count revealed 20,000 leucocytes per cubic millimetre (86% polymorphonuclear cells). Examination otherwise revealed no abnormality.

On March 31, 1932, an incision was made over the swelling parallel to the costal margin. The liver was adherent to the peritoneum. With a syringe pus was found at a depth of 1.25 centimetres (half an inch). A rubber drainage tube was inserted. The abscess contained about sixty cubic centimetres (two ounces) of yellow pus. As the peritoneal cavity was not opened, the condition of the abdominal organs is not known.

Bacteriological examination again revealed *Staphylococcus aureus* in pure culture.

Following operation the temperature remained between 37.8° and 40° C. (100° and 104° F.) for three weeks. In spite of this, the boy's general condition was surprisingly good. The temperature then fell rapidly. Possibly another abscess had ruptured into the cavity already drained, since the fall in the temperature followed a greater discharge from the wound. He left hospital on May 16.

#### Comment.

These boys are cousins, and L.J. had just returned from a six weeks' holiday at the home of R.I., a small farm, when he became ill. Neither of them was at all ill during the six weeks. No source of infection was discovered. The only known dietary indiscretion was eating green peanuts, which did not cause any apparent gastro-intestinal upset.

The most striking feature of both cases was the mild toxæmia. Neither of the boys ever looked really seriously ill, both took their food readily, and their tongues remained moist.

What was the source of infection in these cases? The history given by the mothers was almost a text book

description of acute catarrhal jaundice. But one hesitates before suggesting that catarrhal jaundice may be followed by abscess of the liver.

#### CONFUSIONAL INSANITY ASSOCIATED WITH DIPHTHERIA.

By S. J. CANTOR, M.B., B.S. (Melbourne),  
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MENTAL symptoms may occur as a result or as a complication in many forms of illness, including the infectious fevers. The notes of two cases in which the mental state was due to diphtheria may serve to emphasize the necessity of making an adequate examination physically as well as mentally.

#### Case I.

Miss P., aged twenty-eight years, suffering from her first mental attack, was admitted to the mental hospital on October 5, 1929. Her bodily condition was poor. Her tongue was dry. Sordes was present. The pulse was small and rapid.

She was in hospital for two months until three days before admission to the mental hospital. She was treated for pleurisy with effusion, pyelitis and salpingitis. On the day of her discharge from hospital she said that she was going to cure all the other patients by massage; she also said that she felt electricity. She required mechanical restraint. She was talking incoherently and disconnectedly. She was inaccessible, restless and oblivious of her surroundings. The sores in her mouth were produced by her having to be fed.

On admission to the mental hospital on October 5 she took no notice of her surroundings. She was restless and muttered constantly. She did not answer when spoken to. On October 7 there was hollow, brassy breathing. The temperature was 37.2° to 37.8° C. (99° to 100° F.). The pulse was rapid. The tongue was coated. There were patches of soft diphtheritic membrane on the right tonsil, on the inside of the cheeks and on the lips. A direct smear showed the presence of the Klebs-Löffler bacillus. Antidiphtheritic serum was injected. She was transferred to the Infectious Diseases Hospital, where she died.

#### Case II.

Mrs. D., aged thirty-two years, was admitted to the mental hospital on October 6, 1929. Physical examination revealed a temperature of 36.7° C. (98° F.) and a regular pulse of 96 to the minute. The tongue was moist and clean. The pupils reacted. Bilateral conjunctivitis was present. Follicles were seen on each tonsil, especially the right; the uvula and palate were congested. No membrane was present. Glands were palpable and tender on the right side of the neck. The heart was clear. An abscess of the right breast was opened. The abdomen was tender, no rigidity was present. Direct smear from the throat showed no Klebs-Löffler bacilli; but these organisms were found on culture.

In regard to her mental state, her behaviour was abnormal. She called out and talked rubbish. She refused medicine and nourishment. She did not sleep, in spite of sedative drugs. She was noisy and somewhat confused. She had dry tongue and lips. She looked ill. She had been ailing for seven days. She had a child born six weeks before her admission to hospital; it died seventeen days after birth. She was religiose and erratic, breaking off in the middle of sentences.

On October 8 she was excited. Echolalia was present. She was negativistic, amnesic, depressed. Her tongue was coated. She said she was dead and that she died when her baby died. She kept on shaking her head from side to side and explaining that she could tell she was dead by doing so. She was hitting her head.

On October 10 she was given 12,000 units of diphtheria antitoxin. On October 11 she was transferred to the Infectious Diseases Hospital, from which she was returned on November 6. She was mentally and physically well, and was discharged on the following day.

## Reviews.

### SEXUAL DEVELOPMENT IN MAN.

We are told upon the cover of Professor Maranon's book "The Evolution of Sex" that the author is a medical man of international reputation, and that he is to impart a "suggestive and indeed revolutionary contribution to the theory of sexual differentiation, based upon twenty years observation of anomalies of the sexual instinct in the Madrid General Hospital".<sup>1</sup> On the same cover we are given the information that the author was closely connected with the Spanish revolution *et cetera*. It is difficult to see what connection this has with the subject matter, but no doubt the publishers thought it advisable to instruct readers as to the standing of the author.

Well we do not like the title of his book, to begin with. Any medical man, general biologist, or member of the educated laity, might reasonably expect the contents to deal with the evolution of the phenomena of sex in the world of living things, commencing with the simplest protozoan and ending with man. The term "evolution" is most frequently used in that sense today. The author, however, really means the development of the sexual functions in man. It is a pity he did not say so, for the work is mainly some account of hermaphroditism, intersexuality and homosexuality in human beings.

The revolutionary aspect of Maranon's thesis is set out as being: (i) the assumption that every individual is, to begin with, possessed of the potentialities of developing into either sex, and (ii) that "the study of the morphology of sex clearly indicates that the woman has stopped short at a stage of hypoevolution in relation to the man—the true terminal form of sex—in a position midway between the adult man and the adolescent". The latter sentence, which is a quotation, indicates something of the style of the book.

Now the first assumption stated above is not by any means original; it was indeed worked up in an eminently scientific manner with examples from all sorts of animal groups in the classic work of Goldschmidt on the mechanism and physiology of sex determination. It has been admirably stated by several English authors in recent years, and the present work would have gained considerably had reference been made to these. In fact the work loses immensely because case histories almost exclude reference to comparative physiology. The second aspect referred to above is a problem on which opinions are by no means in agreement.

Had the writer adopted a more scientific attitude, his classifications would also have been clearer. The term intersex was invented and defined by Goldschmidt and the meaning is now well known. It refers to organisms which, after commencing to develop along the lines of one sex, change over and complete their development under the control of hormones of the other sex. Gynandromorphs, on the other hand, are creatures which from the beginning have developed presenting such conditions that some part of the body is male whilst the rest is female. Frequently one half is male and the other half female. The condition is exceedingly rare in mammals. Neither of the terms is given its usual significance in the book before us.

We have stressed these lapses because the book gives a most interesting and well written account of the sexual development of man and of the relation of the endocrine organs to this development. And if we do not agree with all the author's conclusions, his treatment of them is at least stimulating and the subject matter calmly and carefully chosen. The author's thesis that outside the pathological circle there is yet another circle comprising thousands of human beings whose morphology and psychology are practically and socially normal, but whose sexual differentiation exhibits a wide range from the confused to what we call the normal, is both interesting and important. There is much in the book that would

be exceedingly good for the legal profession to read; it will also be of particular interest to the psychiatrist.

Each chapter is provided with an extensive bibliography, the style is clear and the printing excellent.

### HOSTILITY IN MARRIED LIFE.

In last week's issue there appeared a review of "Sex Hostility in Marriage", a book by Dr. Th. H. Van de Velde. Unfortunately, through a printing error, a line was omitted and another substituted in its place. In these circumstances we prefer to publish the correct review hereunder.

Books on sex life and marriage are becoming more and more numerous. Some are useful, others are written with an object that is hard to discover. "Sex Hostility in Marriage", by Dr. Th. H. Van de Velde, is useful and is intended for people "whose marriage is menaced by the spectre of hostility".<sup>1</sup> He holds, and rightly, that "a diseased person should not attempt to obtain help from reading a book such as this". He goes on to state that only treatment adapted to his particular condition can be of any assistance. With this we are in entire agreement, and would add that the treatment of a person diseased either in mind or body should be undertaken by a medical practitioner who is *au fait* with his subject.

The book is divided into two parts. The first deals with the origin of hostility in marriage, and chapters are devoted to primary and secondary sexual aversion, the contrast between masculine and feminine and the passing from specific aversion to antagonism in marriage. The second part of the book is devoted to a consideration of prevention and treatment. The chapters in this section are entitled: "Apologia of Marriage", "The Choice of a Partner", "Insight and Adaptability", "The Importance of Practical Erotic Knowledge in Marriage", "Treatment". We think that the author might have laid more stress on the influence of upbringing and on the intellectual environment of the home. The greater part of this book, however, contains sound teaching and would certainly be of use for those for whom it is intended. Medical practitioners need to be careful before they recommend to their patients any book on sex; no exception to this statement can be made as far as this book is concerned.

### Notes on Books, Current Journals and New Appliances.

#### THE FINCHES OF AUSTRALIA.

EARLY in this year a note was published in these columns of a book by Neville W. Cayley, entitled: "What Bird is That?" The book was welcomed as being of interest to all lovers of Australian birds. Mr. Cayley has now published another book: "Australian Finches in Bush and Aviary".<sup>2</sup> In this volume the author has recorded his observations and the results of his study of Australian finches. He has tried "to supply a much needed and comprehensive manual" for those who keep and breed finches, and has offered to those who take a more scientific interest in finches information concerning them in their natural habits. A chapter is devoted to each type of finch, and the subheadings of the chapters include "References", "Description", "Distribution", "Field Notes", "Aviary Notes", "Hybrids" and so on. The distribution is shown by shaded maps of Australia. The book is illustrated by many black and white and by coloured pictures of the birds. The reproduction is beyond reproach. We congratulate both the author and the publishers.

<sup>1</sup> "Sex Hostility in Marriage: Its Origin, Prevention and Treatment", by Th. H. Van de Velde; translated by H. Marr, M.A.; 1931. London: William Heinemann (Medical Books) Limited. Demy 8vo, pp. 312. Price: 17s. 6d. net.

<sup>2</sup> "Australian Finches in Bush and Aviary", by N. W. Cayley, F.R.Z.S.; 1932. Australia: Angus and Robertson, Limited. Royal 8vo, pp. 274, with illustrations. Price: 12s. 6d. net.

<sup>1</sup> "The Evolution of Sex and Intersexual Conditions", by G. Maranon, translated by W. B. Wells; 1932. London: George Allen and Unwin, Limited. Demy 8vo, pp. 344. Price: 15s. net.

## The Medical Journal of Australia

SATURDAY, NOVEMBER 19, 1932.

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### GONORRHEA IN WOMEN.

THE problem of venereal disease may be attacked from two points of view, the preventive and the curative. It is obvious that these will often overlap, for, in curing a patient of his or her infection, a medical practitioner prevents the spread of disease amongst those with whom the patient may come into contact. The claim may thus be made that all treatment of persons affected by venereal disease is in reality preventive. The prevention of venereal disease is attempted in many ways which need not be enumerated, but in spite of all that is being done, new infections are continually occurring and the sum total of disability does not appear to be lessened. Particularly is this true of gonorrhœa.

Different aspects of the prevention of gonorrhœa have been discussed in these pages from time to time. One on which sufficient emphasis has not been laid is mentioned by Sir George Newman, Chief Medical Officer of the Ministry of Health of Great Britain, in his report for the year 1931. After pointing out that there is slight, if any, evidence of a decrease in the incidence of gonorrhœa in the

country, he refers to a suggestion previously made by him that an important factor in the failure of efforts to reduce the number of gonorrhœal infections is the low proportion of infected women who are brought under treatment. In 1931 the ratio of females to males reported as having been dealt with in Great Britain for the first time for syphilis was as 1·0 to 1·65; in regard to gonorrhœa, the ratio was 1·0 to 3·81. In considering the significance of these figures it must be remembered that in all probability more men than women suffer from gonorrhœa. The figures may be taken, however, as an indication that of those affected by gonorrhœa a larger proportion of male than female patients come under medical observation. It is obvious that if all infected women received adequate treatment the ravages of gonorrhœa would be lessened. This indicates the importance of the problem. Further, it is well known that gonococcal infection in women may produce symptoms that are quite trivial. This indicates the difficulty of the problem.

If a large proportion of women suffering from gonorrhœa are to be brought under treatment, two things are necessary. First of all the women must recognize the necessity for seeking medical advice. No difficulty will be experienced with women apprehended under the provisions of the *Venereal Diseases Acts* or other legal enactments. For the others little more remains than a process of general education. Sir George Newman states that "practitioners and health visitors could render substantial help in this matter by taking every opportunity of impressing on women the great importance of having any abnormal vaginal discharge investigated". In this, as in every other aspect of education of the public in health matters, care must be taken that no venereal disease phobia is started. It would be better that a symptomless vaginal discharge should remain uninvestigated, than that marital happiness should be destroyed through unwarranted suspicions started by wild preaching against venereal disease and its iniquitous progenitors. When the patients have sought advice for some abnormal vaginal discharge or other symptom, the matter may be extremely difficult. Every purulent vaginal discharge is not gonorrhœal, nor does every

gonococcal infection produce a purulent discharge. This is not the place for a dissertation on the diagnosis of gonorrhœa in the female. It will be sufficient to state that a careful investigation of urethra and cervix must be made, that failure to find gonococci in one smear is not sufficient to exclude gonorrhœa from the diagnosis and that the complement deviation test for gonorrhœa will often clinch a diagnosis that can be made by no other means. Readers will find a most valuable paper on the diagnosis and control of venereal infections in girls committed to institutional care, written by Dr. K. S. Macarthur Brown in the "Transactions of the Third Session of the Australasian Medical Congress (British Medical Association)". It would be wise if, until the contrary was proved, medical practitioners regarded as gonorrhœal every newly appearing purulent vaginal discharge.

### Current Comment.

#### IRREGULAR UTERINE BLEEDING.

THE attention of those working on and interested in the endocrines has for some time past been focused upon the pituitary body and its relation to the ovary. It is only natural that continued endeavour should be made to make clinical application of knowledge as it is gained. The warning must, however, be sounded that medical practitioners must not allow themselves to be carried away by a premature enthusiasm. Medical practice admittedly is but little truly scientific. It deals with a highly evolved physical product, ensnared in a social fabric of great complexity. It seldom can have true controls for its work, and its practitioners do not always ask for controls, provided they can obtain results. This caution is perhaps more necessary in the application of endocrinology to practical medicine than in any other therapeutic activity.

A. D. Campbell, in presenting a study of the hormone extracted from human placenta, points this out clearly.<sup>1</sup> He has studied a series of 84 cases of irregular uterine bleeding, with special reference to the effect of administering the anterior pituitary-like hormone extracted from placental tissue. His results were definitely encouraging, though he is careful to style his final paragraph "impressions", not "conclusions". Moreover, a very complete study of the clinical history and physical condition was carried out in the case of every patient. Of the women, 60% were submitted to

radiological examination of the head, but no abnormality of the *sella turcica* was found. Careful pelvic examination excluded those patients whose bleeding was due to endocervicitis or birth trauma. All cases of post-menopausal metrorrhagia were omitted also, on account of the possibilities of the presence of malignant disease. The need for careful exploration of the interior of the uterus is stressed, and reference is also made to the observation of Whitehouse, that the presence of even a small intramural fibroid may interfere with contraction of the uterus and favour excessive loss of blood. Exploration of the uterus gives an opportunity for biopsy of the endometrium to be carried out. Campbell finds that although the endometrium gives little information as regards the character and severity of the bleeding, it is nevertheless a fair index of ovarian function. Of course, it must be borne in mind that comparison of endometrial samples from different patients should be made at corresponding points in the menstrual cycle, and in cases of continuous or prolonged hemorrhage this is difficult.

Having recognized the obstacles to be surmounted and thus emphasized the need for caution, we now turn to the results obtained. Campbell arranged his patients in several categories, according to the type of bleeding, ranging from the type with normal cycle and normal duration but excessive amplitude to that characterized by continuous excessive haemorrhage. In animals the administration of the anterior pituitary-like hormone leads to the precocious appearance of normal oestral cycles, and it is assumed that any successes attained were due to the balancing of ovarian function with subsequent recovery of normal uterine structure. Best results were obtained by daily injections for seven days, followed by injections every second day until the patient had passed through two menstrual cycles. A high proportion of patients benefited to an encouraging degree, with the exception of one group, including some of those with a short menstrual cycle. Sometimes symptoms recurred on cessation of treatment, but a short course of injections usually then proved effective. Immediate control of bleeding did not necessarily occur; in cases of *metrorrhagia haemorrhagica* temporary exacerbation occurred, but bleeding later subsided. Patients with continuous bleeding since puberty did well, and in particular also those with *post partum* metrostaxis.

In conclusion, the author has the distinct impression that this form of hormone therapy is promising. Cases must be properly selected. It was found that bleeding both during and between the periods in patients suffering from pelvic inflammation was exaggerated. Mastalgia was apparently relieved when it was associated with the abnormal cycles, but dysmenorrhea was not relieved. There appears to be a future for this line of treatment, but it should be noted finally that the author had the advantage of employing a preparation made by Collip, of McGill University; and those desirous of trying the treatment must be assured that they are using a reliable product.

<sup>1</sup> *The Lancet*, September 10, 1932.

## AURICULAR FIBRILLATION IN CHILDHOOD.

SINCE the work of Mackenzie and Lewis and all the army of cardiologists that have followed in their train, the recognition of auricular fibrillation has become almost a commonplace. Though it may be difficult at times to distinguish series of ectopic beats from this peculiar form of arrhythmia, the diagnosis is as a rule simply made by ordinary clinical methods, and in adults at least it is common. Perhaps there is a tendency to make a diagnosis of auricular fibrillation, to prescribe digitalis, and to let the matter rest at that. Obvious though it may seem that the irregularity is not the most important feature of the patient's cardiac condition, this fact is often overlooked. Yet it is on the functional capacity of the ventricles that the heart depends for its ability or otherwise to cope with even the ordinary duties of every day. Students of medicine accustomed to see "fibrillators" in the wards in more or less advanced stages of cardiac failure, are sometimes surprised to meet other patients in the outdoor clinics moving about with astonishing briskness, even though their hearts are grossly irregular and with a definite pulse deficit between apex and wrist.

The factors governing the functional capacity of the heart in auricular fibrillation are very clearly illustrated in children. In them degeneration through the relentless wear and tear of life does not come into the picture. In them there can be only one factor of importance, that of active infection, and they are suffering from a general carditis, which has interfered with the conduction system of the heart, just as it does to cause a transient heart block, also seen not infrequently in rheumatism. The ventricles are thus apt to be severely damaged; consequently the prognosis is serious. This does not mean that auricular fibrillation is ever to be lightly regarded in adults, but it does happen sometimes that slowly progressing degenerative change, following infection or vascular disease, may cause an irregularity in a heart that is still able to fulfil the lessened requirements of an older person, at least to a modified extent. But the child has often a massive and still active cardiac infection; he has life before him, life with its rapid growth and its vast output of energy, and under this progressively increasing burden the heart often fails.

The seriousness of the outlook for the child with fibrillation is borne out by the observations of H. W. Schmitz, who has recorded a series of nineteen such cases.<sup>1</sup> Seven of the children died, the majority with evidence of active carditis. This fact is important, as Schmitz points out, for unless active rheumatic carditis is present, children with chronic cardiac disease seldom suffer from congestive failure. The longest period intervening between the onset of the arrhythmia and death was fourteen months, and the shortest seventeen days in the children with active heart infection, whereas the others lived two and three years. Who could

fail to respect an active rheumatic carditis after this?

But the picture is not entirely gloomy, for the child can triumph over the acute process, and, as Schmitz remarks, though recurrences of rheumatism are common in children, they become less frequent as time goes on, being distinctly rarer during the second half of the second decade than during the first half. If the fibrillating child attains the age of puberty, his prognosis is much better, and the disease tends to settle down into the more chronic adult type.

As regards treatment, of course absolute rest while there is any possibility of active infection is imperative. Schmitz considers that any of the following should be regarded as evidences of activity, perhaps of low grade, but still dangerous: inertia and listlessness, a morning leucocyte count of 9,000 per cubic millimetre or over, a rectal temperature of 37.8° C. (100° F.) or more in the afternoon, a ventricular rate persistently over 95 at rest, inability to show improved tolerance to exertion or to gain weight. Digitalis is given as in the adult type of disease, to control a rapid irregular heart and to relieve congestive failure. The arrhythmia may persist when once established, but may be intermittent or paroxysmal in some cases. Auricular fibrillation is not frequently seen in childhood, but with a wider interest in the subject perhaps more instances will come to light, and even greater care will be taken of children convalescing from rheumatism.

## USE OF NEGATIVE PRESSURE IN EAR, NOSE AND THROAT CONDITIONS.

NEGATIVE pressure is often used in the diagnosis and treatment of suppurative sinus disease, in the treatment of middle ear suppuration, in operations on the nose and throat carried out under general anaesthesia, and in bronchoscopy and oesophagoscopy. Of its value there can be no doubt. In order that frequent use, however, may not give rise to lack of care, it is well to note a case recently reported by William Gordon from the Graduate Hospital of the University of Pennsylvania.<sup>1</sup> The patient, a woman, aged twenty-seven years, was admitted to hospital complaining of severe right frontal headache. Her distress was so severe that narcotics had to be given before she obtained relief. The patient gave a history of having had strong massive suction applied to the frontal sinus two weeks previously. A bilateral Skilern frontal sinus operation was performed. The frontal sinus was large and contained abundant hyperplastic tissue, some of which was detached; and from the finding of polypi in the region of the right naso-frontal duct it was concluded that herniation of polypi and mucous membrane into the duct had taken place. While recognizing the value of negative pressure, rhinologists will endorse Gordon's conclusion that it must be used with the utmost care and gentleness.

<sup>1</sup> *The American Journal of Diseases of Children*, August, 1932.

<sup>1</sup> *Archives of Otolaryngology*, September, 1932.

## Abstracts from Current Medical Literature.

### MEDICINE.

#### Cinchophen Poisoning.

T. G. REAH (*The Lancet*, September 3, 1932) discusses thirty-five cases of jaundice following the use of cinchophen, including three hitherto unpublished cases. The drug was introduced in 1908 under the proprietary name of "Atophan". Cinchophen and its derivatives are also known by various other synonyms. The quinoline nucleus is common to all, and it has been suggested that where toxicity is evidenced by jaundice, the jaundice is due to the presence of this nucleus. In healthy persons the administration of cinchophen causes a great increase in the output of uric acid and an even greater output in those suffering from gout. The increase is found to appear about two hours after the administration, persists for two or three days, and then falls to normal, in spite of the continued ingestion of the drug. The manifestations of poisoning are cutaneous, rashes occurring alone or in association with jaundice, vaso-motor, gastro-intestinal, renal disturbances, exacerbation of the joint condition with fever and malaise and hepatic involvement. The onset of jaundice is the first definite indication of involvement of the liver. Once it has appeared, it may be only transient or it may persist for some time, the patient eventually either recovering or dying. Occasionally the progress to a fatal termination is rapid. Loss of weight may be a prominent symptom before the onset of jaundice. At autopsy destruction of liver cells is found. In more chronic cases there may be found a widespread fibrosis and even attempts at regeneration of liver tissue. The figures are too few to attempt to draw conclusions, but it would seem that the prognosis, once jaundice has appeared, is worse in females than in males and in those patients who are over the age of fifty. Other factors which would appear to influence the prognosis adversely are the administration of protein shock, pregnancy, the presence of syphilis or carcinoma, a history of alcoholism and the performance of a surgical operation. The appearance of toxic symptoms does not appear to depend on the amount of the drug taken, the milder symptoms having followed the ingestion of a single dose of 0·45 grammes (seven and a half grains). The smallest amount which has resulted in death in any of the cases described is four grammes (sixty grains) taken during a period of two days. It has been suggested that the drug should be given only three times daily for three consecutive days each week and that it should never be given for more than three days without a four days' rest, but even this dosage has resulted in symptoms of poisoning in certain cases. The simultaneous

administration of alkalis also does not appear to have been of any definite value. The drug should be stopped at the first appearance of any toxic phenomena. Glucose should be given in large amounts by mouth or intravenously. Calcium salts, either in the form of calcium gluconate or of a 5% solution of calcium chloride, should be given intravenously and very slowly. The use of cinchophen should be restricted to severe cases of gout when other methods of treatment have failed. Idiosyncrasy may be tested with a small initial dose.

#### The Extrinsic Factor in Pernicious Anæmia.

M. B. STRAUSS AND W. B. CASTLE (*The New England Journal of Medicine*, July 14, 1932) believe that Addisonian pernicious anæmia is a deficiency disease conditioned by the lack of a specific intrinsic factor present in normal human gastric juice. The function of this intrinsic factor is to interact with an extrinsic factor in the food to produce specific haemopoietic effects. The interaction of these two factors prevents the development of pernicious anæmia in the normal individual. As a result of experiments and observations quoted they conclude that the essential extrinsic factor may be defined as a substance closely related to vitamin B<sub>2</sub>, if not vitamin B<sub>2</sub> itself. They suggest that pernicious anæmia, the macrocytic anæmia of the tropics, of sprue and of coeliac disease are due in common to the lack of a specific haemopoietic reaction between an extrinsic factor (vitamin B<sub>2</sub>) and an intrinsic factor of the normal human gastric juice. In those cases of sprue, of macrocytic anæmia of the tropics and of coeliac disease which respond to the administration of yeast, the specific reaction is absent, mainly because of a lack of the extrinsic factor. In certain cases of macrocytic anæmia defects of absorption may be a possible causative factor. Possibly a simple and inexpensive product for the treatment of pernicious anæmia might be made by allowing hog's stomach mucosa (source of intrinsic factor) and yeast concentrates (source of vitamin B<sub>2</sub>) to interact under proper conditions and then desiccating the product. A way would seem to be opened for the experimental production in animals of a macrocytic anæmia resembling pernicious anæmia. Vitamin B<sub>1</sub> is a close relative of vitamin B<sub>2</sub>, and it is possible that its interactions with a factor in the stomach have a significance for the central nervous system analogous to that demonstrated for the bone marrow in the case of vitamin B<sub>2</sub>.

#### Gastroscopy.

R. SCHINDLER (*Münchener Medizinische Wochenschrift*, August 5, 1932) describes a flexible gastroscope which he has had constructed by the firm of Wolf. The instrument possesses a dioptric system as well as lenses in place of the prisms used in the old rigid tube. The main portion of the

gastroscope is composed of an elastic tube surrounded by a double layer of rubber. Between the layers air can be pumped into the stomach to distend the walls. At the tip is a small sponge to cleanse the oesophagus as it is being passed. The lamp lies above this, out of the way of secretion dimming the light. A system of lenses is placed in the flexible tube, which is closed at its upper end by an eyepiece. The instrument is passed with the patient in the left lateral position after the trachea has been anaesthetized. A perfect picture of the whole gastric wall is obtained, although the size of the field is only half of that obtained with the older instruments. The interpretation of the pictures is difficult and requires much practice.

#### Menstruation in Relation to Pulmonary Tuberculosis.

PARAF AND DELIÉ (*Revue de la Tuberculose*, July, 1932) discuss the prognostic importance of amenorrhœa in patients suffering from pulmonary tuberculosis, and the influence of menstruation on the course of the disease. Amenorrhœa is usually found in patients in whom the disease is of active and progressive type, and it is to be regarded as a defensive mechanism rather than a bad prognostic omen. In regard to the influence of menstruation, the authors observed 263 patients with pulmonary tuberculosis. In only 39 had there been amenorrhœa of variable duration. In 173 or 66% of the patients no febrile disturbance accompanied the periods. In 35 patients premenstrual pyrexia was noted, while in 16 exacerbation of the disease occurred at the time of a menstrual period, two having haemoptysis, one pleurisy, and in one the period coincided with the onset of tuberculous meningitis. Experimentally, the authors sought to ascertain the physiological pathology of tuberculous amenorrhœa. From the urine of each of ten patients with this symptom they were able, by a special method, to extract the follicular ovarian hormone, thus confuting the old belief that suspension of ovarian function is the causal factor. Following this research and recalling the fact that extract of *corpus luteum* antagonizes the ovarian hormone, they have treated with *corpus luteum* extract patients in whom menstruation appeared to have a deleterious effect on the course of the disease. In six patients so treated encouraging results have been noted, including cessation of menstrual pyrexia and haemoptysis. Treatment is by intramuscular injection daily for ten days preceding the period.

#### Limitations of Thoracoscopy.

PIGUET AND FROELICH (*La Presse Médicale*, September 14, 1932) discuss the limitations of thoracoscopy with the cauterizing of adhesions in patients treated for pulmonary tuberculosis by artificial pneumothorax. Often it is found that adhesions prevent the satisfactory collapse of the lung, and the authors recognize the value in many cases of severing these

adhesions. They fear, however, that there is a growing tendency to overestimate the value of this operation, and point a warning against its performance indiscriminately. Particularly are they concerned about the type of case in which there is a large cavity or a cavity in close relation to the visceral pleura and which is held out by an adhesion. The freeing of this adhesion, they maintain, would constitute a permanent source of danger to the patient, as the subsequent maintenance of pneumothorax would probably rupture the thin-walled cavity. In this case the correct treatment is to avulse the phrenic nerve. The authors aver that this will in many cases suffice to cause complete collapse of the cavity. They quote statistics to show that an ineffectual pneumothorax, by the addition of phrenic avulsion, can be made to give an excellent clinical result. In conclusion, while admitting the value of cauterizing adhesions in selected cases, they maintain that better results can sometimes be obtained by persisting in methods of collapse therapy.

#### Allergic Headaches.

H. J. RINKEL AND R. M. BALYEAT (*The Journal of the American Medical Association*, September 3, 1932) discuss the pathology and symptomatology of headaches due to specific sensitization. Sixty-five patients were studied, who complained of headaches of a migraineous type. In each instance a relationship to a certain food was shown by testing and by administering the suspected food. Allergic phenomena such as hay fever, asthma, urticaria, eczema and gastrointestinal distress occurred in thirty-seven of these patients. In some patients the headache occurred ten days after ingestion of the food. One-third of the patients suspected that certain foods caused headache. A family history of headache was found in 70%. Potato, banana and egg are mentioned as causative foods. The allergic headaches have all the characteristics of hereditary migraine.

#### Associated Pulmonary Suppuration and Tuberculosis.

SERGENT, KOURILSKY AND COUVÉ (*Revue de la Tuberculose*, July, 1932), after a careful study extending over two years, have been struck by the frequency with which pulmonary suppuration and tuberculosis are associated in the same patient. In this period of time they observed thirteen such patients, forming 16% of the total number of patients with all forms of pulmonary suppuration who came under their care. Of these the majority were suffering from chronic disease, with fetid expectoration and diffuse pulmonary involvement, which prevented operative treatment. In one only of the thirteen patients had pulmonary tuberculosis been known to preexist. In seven patients tuberculosis and suppuration were diagnosed simultaneously by careful bacteriological, radiological and clinical exam-

ination. In five cases tuberculosis was discovered to be present only after pulmonary or pleural sepsis of long standing duration. Of the seven cases with simultaneous tuberculosis, three were of chronic and not very active type and four were of severe bronchopneumonic type, wherein it was difficult to state which of the two affections was responsible for the patient's death. The five patients with consecutive tuberculosis all died within a few weeks or months of bronchopneumonic tuberculosis. The authors conclude, first, that systematic search is necessary in cases of pulmonary suppuration to exclude the presence of tuberculosis. Secondly, that if tuberculosis is present in these cases, the prognosis is grave, especially if there has been prolonged sepsis. Finally, that a strong case is made out for early surgical interference in pulmonary suppuration, both in order to cure the patient and to prevent permanent lung damage, which would favour the evolution of pulmonary tuberculosis.

#### Graves's Disease and Toxic Goitre.

A. T. TODD (*The Practitioner*, August, 1932) describes his method of treatment for Graves's disease and hyperthyroidism. He claims good results. Rest in bed is necessary until the weight has been nearly regained and the pulse and eye signs are normal. Bromides and *cannabis indica* overcome insomnia. When the signs become favourable the patient is allowed out of bed for a few minutes each day, and this time is gradually increased. Quietness and avoidance of excitement are necessary. The diet should consist of fruits, vegetables, sugars and starches. Gravies, fruit and meat jellies are allowed, and a little meat every second day. No fat, except butter, is allowed. Raw or boiled onions are recommended by McCarrison. Excess of vitamins A and D is obtained by giving three tablets of "Ostelin" daily. A tablespoonful of "Bemax" given every day will supply enough of vitamins B and E. Two mixtures are ordered. The first consists of two mils (thirty minims) of a 2% aqueous solution of sodium fluoride, 0.6 mil (ten minims) of Lugol's iodine, made up to four mils (one fluid drachm) with water. The second mixture consists of 0.3 mil (five minims) of chlorodyne, 1.0 mil (fifteen minims) of tincture of catechu, 1.2 mils (twenty minims) of syrup, made up to four mils (one fluid drachm) with water. Two mils (half a fluid drachm) of the first mixture are mixed with four mils of the second mixture and taken three times a day after meals. The proportion of the first mixture is increased until equal parts of the two mixtures are being taken. Fifty-three patients have been treated in this way, and fifty-one have slowly recovered.

#### Cholecystitis.

J. T. MASON AND J. M. BLACKFORD (*The Journal of the American Medical Association*, September 10, 1932) dis-

cuss the conservative treatment of cholecystitis. Inflammation of the liver and bile ducts and damage to liver function accompany cholecystitis. Administration of dextrose and fluid by mouth is necessary to relieve this damage and is more effective than dextrose given intravenously. If ketosis exists, dextrose with sodium chloride is indicated. A low protein diet saves strain on the liver, and a high carbohydrate diet builds up the glycogen reserve of the liver. Six hundred patients were studied. The main symptom was indigestion; there were also fullness and flatulence after meals, and the necessity of avoiding rich and highly seasoned foods, dried foods, cooked cabbage and raw apples. In 50% of the patients hydrochloric acid was absent from the gastric juice. In only 6.7% was the hydrochloric acid percentage above normal. From those patients operated upon the gall-bladder had been removed five to fifteen years before. Of these 56% were relieved of symptoms completely and 83% partially; 13% still had symptoms. Biliary colic had occurred in 18% of these patients and still occurred rarely for a year or two after operation. One-third of all patients were relieved of all symptoms by medical treatment. The foods mentioned were excluded, as was alcohol; overloading the stomach was debarred. A morning saline, usually sodium phosphate, was advised, biliary salts were given before meals, combined with oleic acid; constipation was relieved and alkalis were given occasionally. Reasonable exercise was ordered and infective foci were removed.

#### Treatment of Asthma.

S. M. FEINBERG AND S. L. OSBORNE (*La Presse Médicale*, May 21, 1932) describe the treatment of asthma by raising the temperature by diathermy. Typhoid vaccine, given intravenously, malaria inoculation, injections of milk, sulphur and other substances, even the use of warm baths for this purpose, were thought to be too dangerous for an asthma patient. A high frequency diathermy apparatus of low tension, having a capacity of 3,000 to 4,000 milliamperes, was used. The patient is covered with a greasy preparation and is surrounded by special electrodes. He is covered in with wool and rubber sheeting so that no heat shall be lost. The temperature of the patient is raised to 39.4° to 40° C. (103° to 104° F.) and maintained for several hours. Nausea, weakness, excitement, cramps and herpes are sometimes observed. Only patients with severe asthma, often complicated by emphysema, chronic bronchitis or bronchiectasis were treated. Of thirty patients, fourteen were quite relieved for periods up to eight months, and ten were partly relieved. Relief sometimes was noted at once in the attack, more often two or three days after treatment. From one to six treatments were given. It is suggested that this treatment should be used only in acute asthma when all other forms of treatment have been tried.

## British Medical Association News.

### SCIENTIFIC.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held on September 29, 1932, in the Robert H. Todd Assembly Hall, British Medical Association House, 135, Macquarie Street, Sydney, DR. A. J. GINSON, the President, in the chair.

#### Breech Presentations.

DR. H. C. E. DONOVAN read a paper entitled: "Ante-Natal Treatment of Breech Presentations" (see page 617).

DR. P. L. HIPSLEY read a paper entitled: "Management of Breech Delivery" (see page 621).

PROFESSOR J. C. WINDEYER said that they had listened to two very solid papers, both of which had been read by men eminently qualified to consider the subject of breech presentation.

He wondered what was the cause of the extended leg attitude of the child. It was a funny position for a human being to assume in the uterus, with the legs along the front of the body. But if they studied the attitudes assumed by people sleeping in parks they might be struck by the similarly odd attitudes. Extended legs were seen in quite small foetuses, of twelve weeks' development. The fetus evidently felt comfortable in this attitude in the uterus. But why this position?

In regard to ante-natal rectification of breech presentations, as Dr. Donovan had mentioned, it was the ideal treatment, and there was definite evidence of a 25% reduction in the fetal mortality when this treatment was used. It was therefore certainly worth while. Dr. Donovan had mentioned that there were various methods of attempting to perform version. Professor Windeyer referred to two specimens which had been brought from the obstetric museum at the Medical School. He pointed out that one fetus was in a fully flexed attitude and presented the common ovoid shape of the *fetus in utero*, while the other had extended legs and in shape resembled an acute triangle. It stood to reason that when one was performing the operation of external version it was easier to turn the fetus of the oval shape than the triangular. Professor Windeyer had found that in most of the cases in which he had been unable to do external version the uterine wall fitted closely down on the fetus; there was therefore less chance of turning than when there was a reasonable layer of *liquor amnii* (half an inch or so) between the uterine wall and the body of the child. One should attempt to make the child go round in the *liquor amnii* rather than get hold of one end of the uterus with one hand and the other end with the other. This proceeding would tear the uterus rather than cause the fetus to rotate. The method of external version that he advocated was that described by him in THE MEDICAL JOURNAL OF AUSTRALIA about a year ago. The time at which external version should be performed was from the thirty-second to the thirty-sixth week; this was the most favourable time; it was foolish to attempt it so soon as the twenty-fifth or twenty-sixth week.

In regard to frank breech presentation, one point seemed always to be incorrectly stated. In books authors stated that the extension of the legs caused straightening of the spine. But on examining the X ray picture it was seen that if there was a straightening in the upper portion of the spine there was a curving forwards in the lower portion, for the trochanters were brought well forward. He had found this condition to be present in several cases in which the frank breech was arrested at the brim of the pelvis. Here the arrest had been due to the fact that the sacrum, rather than the ischial tuberosities, was attempting to come down into the pelvis. When the breech was arrested the difficulty could be overcome by bringing down one leg.

In regard to the bringing down of an extended arm, Professor Windeyer agreed with Dr. Hipsley that when they could get the scapulae down it was easy to deal with extended arms. If the angle of the scapula was pressed

towards the spinal column of the child the arm would be brought down more easily.

Dr. Hipsley had mentioned bilateral episiotomy in these cases. Professor Windeyer liked to do a single mediolateral episiotomy. Sometimes the bilateral operation was followed by a central tear in the perineum. In doing an episiotomy it was best to start in the mid-line and cut down to the side of the rectum rather than to make two cuts.

DR. R. I. FURBER said that following on Professor Windeyer's suggestion that foetuses assumed the extended leg position, he thought the attitude might be the cause rather than the result of breech presentation, the frank breech fitting more easily into the lower uterine segment. He had seen a case of extended legs with a vertex presentation, diagnosed by palpation. He thought that episiotomy should be more often done, as it caused less trauma than a perineal tear.

DR. MERVYN FLETCHER asked Dr. Hipsley to tell them how he would manage a complication of prolapsed cord. In one instance Dr. Fletcher had found himself faced with a breech presentation and a prolapsed cord. He thought that he could hear the fetal heart sounds with the stethoscope and tried to hurry the delivery. Oedema of the fetus had occurred in the abdominal cavity. He had had trouble with extended arms as well.

DR. H. A. RIDLER, in referring to ante-natal treatment, said that a consideration of the torn perineum and the dead infants that resulted from failure to convert a breech presentation into a vertex would convince unbelievers of the necessity for doing ante-natal version. Dr. Ridler said that it was not always wise to use an anaesthetic, since without an anaesthetic not much damage could be done. If version could not be performed easily with an anaesthetic, it was not safe to use much force.

In reference to delivery and breech presentation, Dr. Ridler said that most people interfered too soon. He spoke of a breech that was on the perineum for twenty-four hours; the baby was still alive. No sloughing had occurred. With a head on the perineum there would have been extensive sloughing.

Dr. Ridler advised medical practitioners never to use the breech hook, even when the child was dead. The mother usually wanted to see her baby, and it must not be mutilated.

Dr. Ridler thought that Caesarean section was indicated in a breech presentation when the woman was a *primipara* and the infant was large. The necessity for Caesarean section depended largely on the size of the obstetrician's hands; it was quite impossible for many to insert the hand into the vagina. If the obstetrician had large hands there was no hope of his delivering an infant with extended arms.

DR. T. DIXON HUGHES said that since 1929 he had had a record kept of all breech presentations and of all attempts at version at The Women's Hospital, Crown Street. It was still thought by some that there was a grave risk to the fetus in performing version. Several years ago Dr. Ridler published three cases in which death of the fetus had occurred after version, due to complication with the cord, and these cases were still quoted against version.

Dr. Hughes said that he was collecting figures to discover what risk there was in version. In 6,000 confinements there were 70 successful versions. Death of the fetus was not due in one instance to the cord being round the neck, to prolapsed cord, or in any way to the effect of version on the cord. Apparently, however, there was a risk of premature labour if version was performed under an anaesthetic.

In 6,000 confinements there were 150 breech presentations, 54 of the women being *primiparae*, amongst whom the still-birth and neonatal death rate was 45%. If all macerated fetuses and premature babies were excluded, the rate was 24%. Among the thirty-two *primiparae* on whom version was performed, there were four still-births, including neonatal deaths. One was due to a congenital deformity, which left a percentage of 10, compared with 24% fetal mortality amongst the series of *primiparae* on whom version had not been performed. Dr. Hughes men-

tioned in conclusion a case of ectopic pregnancy in which the cord had been once round the child's neck and once round the leg. He thought that in performing version there was a fifty-fifty chance of making or undoing a loop in the cord.

DR. RALPH WORRALL said that the papers had been instructive and worth preserving. He had had experience of only one case of rectification by palpation before birth, at the thirty-fifth week; this one had been entirely successful, but perhaps only through good luck.

Dr. Worrall had no criticism to offer, unless Dr. Hipsley endorsed ironing out of the perineum; it caused minute tears in the mucosa, thus favouring sepsis, and did not dilate the muscular and fascial structures, which was desired. Episiotomy was much to be preferred; it lessened the stress on the child's cranium.

As golden rules Dr. Worrall emphasized the care that must be taken not to rupture the membranes, and also that the birth must not be hurried. There was no danger until the umbilicus was born. It was better to let the child die of asphyxia than to deliver it with a damaged cerebrum. It was most important to avoid all haste: "Wisely and slow! They stumble that run fast."

In conclusion, Dr. Worrall said that ironing out must become a thing of the past.

DR. D. S. FOY thanked the readers of two such instructive and scholastic papers. He agreed with Professor Windeyer, and it was a difficult point to stress, namely, the bearing of haste on deaths occurring at or immediately following delivery. Except in complicated breech delivery, there were many cases in which the infant was still-born as a result of the delivery being hurried. It was perhaps natural for an obstetrician to hurry when he became anxious. He could avoid hurrying if he followed the advice set by De Lee, who recommended the use of the head stethoscope. De Lee used this in all his obstetric work, not only in vertex, but in breech delivery. He could listen to the heart sounds easily and could determine whether to hurry the birth or not. Many an infant had been saved by the use of this instrument, which was a great asset. Hurry might precipitate cranial haemorrhage. Dr. Foy had had under his care, since using the head stethoscope, only one case in which a child had died, and in this instance it was still-born. The infant always died twenty to forty minutes after delivery—three infants had died from cranial haemorrhage in his experience. There was a risk even if the delivery was taken very slowly.

Lastly, Dr. Foy referred to the use of the de Ribes bag. When interference was necessary and it was difficult to insert the hand into the vagina, De Lee suggested that a de Ribes bag should be inserted to extend the vagina; after it had been left in for some time it would be found that the hand could be easily inserted. This procedure was almost the same as the ironing out process of the vagina.

DR. A. J. GIBSON said that it was very important that the true mortality rate in breech delivery should have been so stressed by Dr. Donovan. The older text books gave a false idea. It was startling to realize the high mortality rate. Dr. Hipsley had said that the mortality rate was 26%. Dr. Gibson thought that this was a high figure, and he agreed that if it were possible to do antenatal version, it certainly ought to be done. One should try to diagnose a breech presentation at the thirty-second week. One could then be reasonably sure of the position. In a week's time the patient should be examined again. Sometimes spontaneous version took place about the thirty-second week, but if it did not they must try to turn the fetus at the thirty-third week. Dr. Gibson quoted one instance in which he turned the fetus at the thirty-second week; it resumed its former position a few days later and he continued to turn it each week. He turned it each week for seven successive weeks before he finally succeeded in maintaining a head presentation. The fetus was eventually easily delivered as a head presentation.

There was a risk in performing version. Retroplacental haemorrhage might occur. He had experienced one case

in which, though the fetus turned easily and without the use of any force, there had been an *ante partum* haemorrhage. Therefore, it was unwise to try to turn under anaesthesia, as undue force might be applied. Dr. Gibson said that he had never succeeded with anaesthesia when he had been unsuccessful without it.

DR. RIDLER had thought that much damage was due to interference too soon. But many babies were lost because interference was not undertaken soon enough. In an impacted breech with rupture of the membranes, the *liquor amnii* drained away and the uterus, in trying to expel the child, retracted and unduly grasped the child. If they did not interfere they would lose the child. If they recognized that it was a frank breech and labour was at a standstill, they should interfere early.

DR. GIBSON disagreed with Dr. Worrall as to ironing out the vagina. It was impossible to insert a hand without ironing out the vaginal orifice and vagina. If they could not get the hand in easily they must cause damage, but if careful dilatation of the vaginal orifice and vagina were done under chloroform the hand would slip in easily and perineal tear and other injury were prevented.

DR. GIBSON thought that Dr. Hipsley's reference to the necessity for slow delivery of the head was most valuable. The delivery should not be too quick and the medical practitioner should use his judgement.

DR. GIBSON thought that there were many cases in which Cæsarean section should be done. He thought that they had been too conservative in not doing Cæsarean section earlier. He had lost several babies through trying to deliver breech presentations. Cæsarean section should be considered in certain breech cases in *primipara*. Modern people did not want a large family, and they did want the mother to come through without damage. If the child was large the parents should be asked what they preferred. Natural delivery involved a 40% risk of mortality in the child in difficult cases, but less risk to the mother; whereas Cæsarean section gave small added risk to the mother, but gave much better chance to the child.

DR. DONOVAN, in reply, thanked the speakers for the reception that his paper had been given, and said that there was not much criticism to which to reply. He had expected more criticism of the question of Cæsarean section. He was afraid that most had been too conservative in regard to Cæsarean section in breech presentations. Conservatism was admirable, but it was possible to be too conservative in regard to breech presentations. There was a grave risk of the injuries caused by breech deliveries turning patients into chronic invalids.

DR. HUGHES'S figures might appear not compatible with his, but he deliberately gave uncorrected figures; he had been uncertain as to what standard to take once he began to exclude figures, and thought it would be better to present the bare figures, only excluding twins.

DR. DONOVAN remarked that he never did episiotomy. He had never felt in a position to know how far the tear might go if it was not done.

DR. HIPSLEY, in reply, referred to the point raised by DR. FLETCHER in regard to prolapsed cord. In breech presentation one could only try to replace the cord by one of the recognized methods, such as by the use of a catheter and tape or by wrapping a strip of gauze around the cord and pushing it back into the uterus.

AS TO DR. WORRALL'S objection to ironing out the vagina, WHITRIDGE WILLIAMS recommended this procedure, and it should be quite safe and reliable in careful hands, but might be dangerous in the hands of the inexperienced.

IN REGARD TO Cæsarean section, there were instances where he felt that he could have saved the child by doing this operation, but he considered that the classical transperitoneal operation was dangerous where the membranes were ruptured, and the low Cæsarean was safer, but even this operation was not quite safe. He advocated the extraperitoneal operation when the membranes were ruptured. DR. HIPSLEY quoted three cases in which women had developed septicemia after the classical Cæsarean operation, and although these patients had all recovered, he had decided to avoid this operation in similar cases in the future. Both the extraperitoneal operation and low

Cæsarean section were easier when the breech was presenting than in cephalic presentations. In one instance, where the patient's temperature had been 102° F. and the patient refused to allow craniotomy, the extraperitoneal operation had been performed with complete success.

## Obituary.

### MARGARET HARKNESS McLORINAN.

DR. MARGARET HARKNESS McLORINAN, whose death was recently reported in these pages, was born at South Melbourne in 1887. She was the daughter of the late William Harkness McLorinan. She went to Mentone High School and matriculated at the age of fourteen. She became an undergraduate at the University of Melbourne and graduated as Bachelor of Medicine and Bachelor of Surgery in 1910. As an undergraduate she was a member of the Students' Representative Council. After graduation she became resident medical officer at Queen Victoria Hospital, Kyneton Hospital and the Women's Hospital. Later on she held a temporary appointment on the honorary staff of the Women's Hospital. Her main interest was centred, however, in the Queen Victoria Hospital. She became honorary surgeon of this institution and was largely instrumental in extending its usefulness. She was a Fellow of the Royal Australasian College of Surgeons and member of the Midwives Board of Victoria.

It is difficult in a few words to convey to those who did not know Margaret McLorinan some idea of her strength of character, of her professional ability and of her personal charm. She made a place for herself in the ranks of Melbourne surgeons which will not easily be filled, and she has left a record of devoted service to humanity.

Dr. Constance Ellis writes:

With the passing of Margaret McLorinan, affectionately known to her friends, both inside and outside the profession, as Dr. Peggie, at the early age of forty-six, we are all the poorer by the loss of a brilliant surgeon and a woman of great personal charm. Cheerful optimism radiated from her, and even throughout months of ill health she struggled gamely to continue her work.

She graduated at Melbourne in 1911 and went soon after to the Kyneton Hospital as resident medical officer, where Dr. Groves and the late Dr. Duncan became her friends and teachers, and she always spoke with pleasure of the time she spent in that district. Following this she was appointed resident surgeon at the Melbourne Women's Hospital and here she laid the foundation of her work in obstetrics and gynaecology.

On leaving the Women's Hospital she joined the out-patient staff of the Queen Victoria Hospital and practised for a short time at Clayton. In 1914 she took over the practice of Dr. May Henderson on the marriage of the latter, and it was then that my own friendship and association with her began. She was then fast developing her skill and technique as a surgeon and making full use of her increasing opportunities.

From her earliest association with the Queen Victoria Hospital she took the greatest pride in it and its further development. Her services to it cannot be easily measured, even by those of us who worked side by side with her. Her help was always forthcoming to all her colleagues, and numerous generations of residents have learned much from her skill and teaching. Her vigour and determination and the strong impression she made on others with

whom she came in contact contributed much to the success of projects that sometimes appeared almost unattainable.

During the absence of many medical men at the war she rendered valuable help at the Women's Hospital, serving on both the in-patient and out-patient obstetrical staffs.

Her great aim was the foundation of an obstetrical department at the Queen Victoria, and before any beds were available she and other members of the staff initiated ante-natal consultations which were ultimately followed by the present obstetrical department, where she had the satisfaction of working as senior obstetrician and which truly stands as her lasting memorial. She was very keen on the efficient training of midwifery nurses and was both a member of the Midwives Board and an examiner in midwifery. I am sure many of these nurses will long gratefully remember her teaching. For some years she was chairman of the hospital staff and a member of the committee of management, on which her advice was invaluable. She was equally interested in the work of the various hospital auxiliaries and was always a willing speaker at their meetings, where she could always arouse both interest and enthusiasm. She rose to be senior surgeon at the hospital, and was made one of the first women members of the Royal Australasian College of Surgeons.

At the Australasian Medical Congress of 1923 she acted as Joint Secretary, with Dr. Morrison, in the Section of Gynaecology and Obstetrics, and worked very hard to insure the success of its meetings.

She was a member and sometime President of the Victorian Medical Women's Association and was one of the prime movers in the Women's Medical Congress held to commemorate the twenty-fifth year of the Association. I well remember her enjoyment at its success and the strong impression her obvious joie de vivre made on our visitors.

We have lost our ever-helpful comrade, but her ability, charm and personality will leave their mark.

Dr. A. M. Wilson writes:

Margaret McLorinan has left us in the prime of her career. Those of us who were students with her will always remember her unfailing cheerfulness and her robust healthiness.

After doing a very good course at the university, she graduated in 1910 and very soon she became a resident at the Women's Hospital. As one of her fellow residents, I was always impressed by her ability, her capacity for hard work, and her kindness to the patients.

At the Women's Hospital she laid the foundation of what was to be her life work. She became a very excellent obstetrician and gynaecologist and was appointed to the staff of the Queen Victoria Hospital. She occupied her various positions on the staff of that hospital with much credit and honour, and was undoubtedly one of the most capable and successful women practitioners who have graduated in Melbourne. In her short career she established for herself a very high reputation amongst her professional colleagues.

Unfortunately, her years of hard work in the service of others began to undermine her health, and for the last year her strength had begun to fail. Yet, in spite of her great and increasing physical disabilities, she insisted on remaining at work. The last time I saw her was just three months ago. She, together with Dr. Felix Meyer and myself, was on the Board of Examiners for Midwives. It was one of the saddest afternoons I have ever spent, seeing her as she was and remembering her radiant vitality of a few months ago.

She had one fault, if it can be considered a fault—her excessive kindness to others. She was a woman of excep-



tional talents and ability, and it seems unfair that she should be taken so early. Now she has gone—her life work not quite finished—and we are all the poorer for her passing.

#### PATRICK SHAW.

DR. PATRICK SHAW, whose death occurred on October 4, 1932, was born in East Melbourne on January 1, 1875. He began his education at Old Scotch College, East Melbourne, and studied medicine at the University of Edinburgh. He graduated in 1904, becoming a licentiate of the Royal College of Physicians and the Royal College of Surgeons of Edinburgh. He was appointed to the staff of the Inverness District Asylum. He returned to Australia in 1905 and entered the government service. He served in mental hospitals at Ararat, Kew and Ballarat until the time of his death. His service in the Mental Hospitals Department was interrupted during the years of the war. He joined the Australian Army Medical Corps and held the rank of captain. He joined up in January, 1915, and served until after the armistice.

Dr. W. Ernest Jones, Inspector-General of the Insane, Victoria, writes:

After having gained experience in the treatment of the mentally affected in the Inverness District Mental Hospital, Dr. Patrick Shaw returned home to Melbourne and was appointed as a medical officer in the Lunacy Department.

His first position was at Ararat, at which institution he was for two years. He was transferred to Kew at the end of 1907, and three years later was appointed as Senior Medical Officer and Deputy Medical Superintendent to that institution. Shortly after his return from the war he was appointed as Medical Superintendent to Ararat, and eight months later was transferred to the position of Medical Superintendent at the Hospital at Wendouree.

His performance of his duties was characterized by care and thoroughness. He had always at heart the best interests of his patients and was firm and judicious in his handling of his staff. Essentially a man devoted to his family, he had very few interests beyond his home and his hospital, but he took a good deal of interest in the pastimes which are current in such institutions. His loss will be greatly felt by all those with whom he had to work under his wise and kindly direction.

#### HENRY HOWARD.

We regret to announce the death of Dr. Henry Howard, which occurred on October 28, 1932, at Elsternwick, Victoria.

### University Intelligence.

#### THE UNIVERSITY OF SYDNEY.

A MEETING of the Senate of the University of Sydney was held on November 7, 1932.

A cheque for £186 15s. was received with grateful thanks from the Royal Consul-General for Italy, being the amount of the annual contribution of the Italian Government towards the lectureship in Italian.

Mr. L. Thomas presented a large framed photograph of a medical congress held in Sydney in 1911. The gift was accepted with grateful thanks.

The following appointments were approved: Dr. R. F. Fortune as Lecturer in Anthropology for the year 1933; Dr. Kathleen R. Corin as part-time Assistant Radiotherapist at Saint Vincent's Hospital.

The Senate desires to announce for public information that it may be necessary, for financial reasons, to discontinue the courses in Anthropology in the Faculty of Arts after 1933.

The following conditions were approved in connexion with the Lucien Henry bequest of £1,000 for research in tuberculosis:

From the interest of this fund grants in aid of research in tuberculosis may be made by the Senate on the recommendation of the Faculty of Medicine. An applicant for a grant under this fund must forward to the Registrar a detailed statement of his proposed investigations for transmission to the Faculty. Any subsequent report of such work shall include an acknowledgement of assistance from the Lucien Henry Fund.

It was resolved that a Diploma in Radiology (Dip.Rad.) be instituted in the University of Sydney, the course to extend over one university year of three terms, candidates to devote their full time to the course. The fee for the course will be £50 and £10 for the diploma.

The following amendments in regard to scholarships and prizes in the Medical School were approved:

(1) That the Struth Exhibition and the Henry Wait Bursary be made open to undergraduates upon the completion of the first year in any faculty instead of the first year of Arts only, as at present, and that the question of insufficiency of means of candidates be determined by the Vice-Chancellor and the Dean of the Faculty of Medicine.

(2) That the Peter Bancroft Prize be awarded annually for the best piece of research work in any subject of the medical curriculum published or completed in the previous year by a graduate or an undergraduate in the Faculty of Medicine. The award will be made by the Faculty of Medicine on the recommendation of a committee consisting of the Dean and the Professors of the Medical School, and shall be considered at the first meeting of the Faculty in Trinity Term each year. No award shall be made unless the research is considered of sufficient merit.

(3) That the Parkinson Memorial Prize be awarded annually for proficiency in pathology and bacteriology, instead of for pathology only, as at present.

### Correspondence.

#### THE WASSERMANN REACTION TEST AND NON-SPECIFIC POSITIVE READINGS.

SIR: A group of young men, members of "Toc H", sound in limb, and clean living, present themselves at a general hospital as voluntary donors for blood transfusion.

As is usual, the Wassermann test is applied. One of them is informed that in his case a complete positive reaction was obtained; he is advised to be treated for syphilis.

The man concerned, after discussing the matter with his father, consults his family doctor, who has known him from infancy; he is advised to have the test repeated by a pathologist in private practice. A report is returned: "Wassermann reaction negative by complement fixation test and also negative in a precipitation test (Kline)." The private pathologist, after hearing the history of the case, sends a specimen of the man's blood serum to the Mental Hospitals' Laboratory and receives a report: "Complement fixation test and precipitation test both negative."

The man then consults the original hospital again and informs them of the discrepancy. A second specimen is there taken and part sent to the Board of Health Laboratory. The hospital laboratory again reports a complete positive complement fixation test; the government laboratory reports: "Wassermann test positive; precipitation test (Kahn) negative."

The private report, repeated at the same time, again states two negatives. The man is seen again after an interval of a week. The blood is again examined at the Mental Hospitals' Laboratory and by two private pathologists.

These last tests involved four different methods of the complement fixation test and the Kline precipitation test in the hands of three serologists. In every one of these seven tests the reading was negative.

To summarize, we have here a case, without any previous history, and without any clinical evidence of syphilis, giving positive reactions by two different methods of the complement fixation test, negative reactions by four different methods of the complement fixation tests, and negative readings by two methods of the precipitation test in the hands of four serologists. That is, four out of six Wassermann tests are negative, and four out of four precipitation tests are negative; in all, eight positive and two negative findings.

The question arises, what information, on the strength of the above reactions, is to be given to the man concerned.

The writer is of the opinion that the man should be told that he is not suffering from syphilis. And this on the following grounds: It is fallacious to judge the different techniques of the Wassermann test by ascertaining which one gives, in suspicious cases, positive readings before the others, or by determining which one registers the latest date for a positive reading in cases which are clinically cured. No evidence can be produced in these tests that these early or late findings are truly specific and not artificially produced.

Professor Boas, of the Serum Institute at Copenhagen, who has been concerned with the Wassermann reaction ever since its inception twenty-five years ago, and put to the test every method which has since obtained recognition, is of the opinion that the only test of absolute reliance of any technique lies in the fact that it is never found to give a negative reading in a case which clinically or microscopically has been proved to be syphilis; nor a positive reading in a case which, from its history, and after being subjected to examination by reliable methods, must be looked upon as non-syphilitic.

He is of opinion that there is such a thing as a non-specific positive reaction; this is not common, and it is only by accident that it may be discovered, as in the present case.

If, for the sake of argument, the man here concerned had taken the advice to obtain treatment without further investigations, the case would have been put down as proof of the superiority of the technique which "picked up" the positive reaction while others failed.

Professor Boas, after a quarter of a century's experience, denounces the usual addition of cholesterol to the antigen as a "dangerous proceeding". He insists on the titration of the amoebceptor for every test, and this is followed by the double titration of the complement, with and without the antigen. Non-specific positive reactions are possible if these precautions are not taken.

It is time that serologists gave up the idea of each introducing into the test a "little thing" of his own, which he has happened to find easier, or which, in his opinion, "picks up positives" when others fail, positives of which there is no proof of not being non-specific.

It is time that the authorities over government laboratories and over laboratories at general hospitals should insist on a technique being employed which, extended over years, not months, has proved reliable in large, well recognized, routine laboratories.

Yours, etc.,

A. E. FINCKH.

Sydney,  
October 16, 1932.

#### AN ECONOMIC COMMENTARY AND DIAGNOSIS.

SIR: Naturally I am much interested in Dr. Mary C. De Garis's suggestive letter in your last issue, in which she discusses diagnosis and introduces her brother's treatment, based on a fixed unit of money (measured in labour time and valued in gold).

I do not feel competent to consider the advisability of attempting to introduce the latter, though I entirely agree as to the imperative necessity of leaving no stone unturned in our world-wide fight against economic disease.

But, with all the earnestness at my command, I do plead for a much wider view of "diagnosis". Is not the main cause due to our disregard of a real evolutionary education whereby "Health of Body, Truth of Mind, and Good Will of Spirit" should be brought within reach of every child, "irrespective of creed, race and colour"? When attained, though the way is long, the end is sure.

Meantime, Australia has signed the Declaration of Geneva. Health is more natural than disease, even cheaper also. And yet even medical education remains behind the times, partly from habit, still more, perhaps, from ignorance and fear. Few, if any, hospitals here or elsewhere have yet established "departments for advice", but wait until even out-patients are unmistakably ill. Surely a radical reform is long overdue, all the more since each can be "a director in his own evolution and a partner in the best development of his fellows".

Yours, etc.,

J. W. SPRINGTHORPE, M.A., M.D.

32, Collins Street,  
Melbourne,  
November 5, 1932.

SIR: There are two surprising features of the letter signed by Mary C. De Garis appearing in your issue of November 5, 1932. Readers were surely astonished that your editorial judgement should have sanctioned publication of such a long and incoherent criticism of modern economy and that such a letter should have been written by a medical practitioner.

Dr. De Garis's letter, assuming it is typical of the economic views of our members, quite clearly indicates the utter hopelessness of a remedy for economic illness being discovered by one of the fraternity. The false analogy in the opening paragraph of her letter will not have escaped the most casual reader. What justification is there for the assumption that, because doctors are experts in diagnosing human illness, they can therefore satisfactorily diagnose economic sickness? The prerequisite of the ability to diagnose is a thorough knowledge of the "body", which is the subject of investigation, whether it be *Homo sapiens*, body politic or *corpus juris*. Quite obviously Dr. De Garis fails to distinguish between scientific method and its application. Can a scientist, merely because he is an expert in the handling of processes of induction, scientifically analyse and authoritatively describe every group of data? There is, of course, a limit to what even a medical man can do in the way of becoming sufficiently familiar with the data of other sciences to express a worthwhile opinion. Most of us are fully occupied with keeping abreast of the developments of medical science without spending time getting a smattering of a science of the fundamentals of which we are more or less ignorant.

We medical practitioners, trained in one of the hard schools of learning as well as in the university of bitter experience, know too well the danger to public health of meddling lay "doctors". It is not conceit which accounts for our attitude to the quacks, who fatten on the susceptibility of many of those in the community who suffer from illnesses both organic and functional. Our attitude is justified because of our superior knowledge, for which we do not merit greater commendation than do practitioners in other sciences. Economists would be justified in complaining if medical men encroached upon their preserves. Their complaint would not be prompted by a desire to monopolize economic knowledge, but by a wish to keep their terrain intact from the depredations of adventurers.

That Dr. De Garis is scarcely competent to express an unbiased opinion on economics is clearly shown by some of her really astonishing statements. Her description, for instance, of the present economic system is so one-sided as to suggest either lack of ability to take a broad view or deliberate intention to exclude facts which do not support an argument. The more charitable conclusion is that she is a victim of some form of hemianopia. It is true we have with us "class feeling, strikes, lock-outs, rioting, fraud", and all the other admittedly undesirable

characteristics of the existing economic structure. But surely there is another side to the picture! Have we not had periods of prosperity with very little unemployment? And does there not exist the spirit of *camaraderie* in society as a whole, which unfortunately is sometimes marred by sectional jealousies? Have we not evidences of the finer feelings of our people in our hospitals, kindergartens, prisoners' aid societies, and a hundred and one other organizations, prompted solely by the desire to improve the lot of our less fortunate fellows? We, of course, have pensions and charities, but these, for some remarkable reason, are grouped by Dr. De Garis with gaols. What a sacrilegious classification!

Her knowledge of our banking system is very seriously at fault. We get a glimpse of this in her reference to money. How laughable is her suggestion that there is "a vault filled with gold for the anxious". One generally associates anxiety with empty coffers.

It was surely modesty that prevented Dr. De Garis from fully boosting her brother's "treatment of the economic disease". Had she done so she would have told us something of "The Basenwice", "The Standanwice", "Deci-wice", "Centri-wice", and the never to be forgotten "Freo-wice". These various wices, which are imperfectly described by Mr. L. G. De Garis—only a genius could possibly define them, and even Mr. De Garis lays no claim to any such gift in his "Jubilee Year Propaganda"—are all related to the good old Anglo-Saxon word "wice", which, as we all know, means "week". Now a week, I mean a "wice", is, as everyone will recognize, "the natural unit of work". This is doubtless that part of "the typical economic operation" which in her letter Dr. De Garis calls "sowing", that is, "labour".

Well, this labour, or as much of it as can be done in a week, is a "wice", that is "the natural unit of work". This unit, when "related to work product", will be the basis of the payment of all labour. Therefore the "basic wage issued to each person each week" is "The Basenwice" and "the unit of output in products available in exchange for the Basenwice" is "The Standanwice" and "the unit of surplus output of product for interest, pensions and incentives to efficiency" is appropriately called "The Freowice". These definitions are those given by Mr. De Garis, and, although sponsored by Dr. De Garis, are not taken seriously in economic circles, so I am informed.

It is important to remember that wice is to be the new currency from July 1, 1933, the Basenwice is to be the basic wage to June 30, 1935. The Standanwice is to be the standard wage to June 30, 1940, and in seven year cycles thereafter, while the Freowice, or surplus dividend, will circulate during each seven year cycle. I must add the further stipulation from Mr. De Garis's "Credit Economy for Australia".

Until world-wide adoption of Wice currency, the Commonwealth of Australia to legislate for international conversions of Wice for domestic purposes on the basis of 80 grains of gold.

I leave these momentous prophecies for your meditation between consultations. You may come to agree with Dr. De Garis's economic prescription. "It [that is, Wice currency] offers a very practicable treatment for the disease, if once the diagnosis above given be accepted."

Yours, etc.,

"THE COBBLER AND HIS LAST."

November 9, 1932.

#### SKINT AND SIGHT SAVING.

SIR: Dr. Granville Waddy (*vide* THE MEDICAL JOURNAL OF AUSTRALIA, November 5, 1932, page 586) gives a timely warning against the formation of numerous uncontrolled classes for fusion training.

The work in such classes, whether in public hospitals or in private practice, should be done under the supervision of oculists, and the work should be restricted to fusion training only. The treatment of amblyopia does not come within the scope of such classes in Melbourne. In the hospital class this treatment is done entirely in the eye

clinic and the patients are not sent for fusion training until the vision of the squinting eye is  $\frac{1}{12}$  approximately. When the child is too young to read, one relies on an attempt to produce a state of alternation by keeping sometimes one eye and sometimes the other eye tied up until the child is sufficiently developed to concentrate on fusion training.

The workers in a new class will be greatly discouraged unless the patients are restricted to those with more than  $\frac{1}{12}$ , to those without abnormal retinal correspondence, and to those in whom the squint appeared after the age of two years. The problems of abnormal retinal correspondence are great, and those who are interested are referred to an article by Dr. T. A'B. Travers in the October, 1932, issue of *The Australian and New Zealand Journal of Surgery*.

In Melbourne there are only four lay workers doing hospital work, and they work in an honorary capacity. Three of these work together in private practice. Their rewards are those that accompany an absorbing occupation and the support that oculists only can give them in their private practice. As they can treat only patients who are referred to them by oculists, they are dependent on the medical profession, and in this way the matters of fees, advertisement and work other than fusion training are really controlled by oculists themselves. It is a mistake for oculists to buy the necessary apparatus, for they will soon find that the best results are only obtained by specially gifted trainers who give their whole time and patience to this work.

Yours, etc.,

J. RINGLAND ANDERSON.

108, Collins Street,  
Melbourne,  
November 8, 1932.

#### Corrigendum.

OUR attention has been drawn by Dr. Marion Wanlass to certain errors appearing in the issue of October 15, 1932, on pages 492 and 493. In the first case history the words "urea concentration test yielded a figure of 2%" should read "yielded a maximum figure of 2%". In the second case history two references are made to sputum yielding no growth on attempted culture. Dr. Wanlass stated that "the sputum was negative". Apologies are offered to Dr. Wanlass for these errors.

#### NOTICE.

THE Honorary Secretary of the Royal Australasian College of Surgeons announces that the annual general meeting of the College will be held in Sydney from April 10 to April 13, 1933. Concession fares on railways will be available to all Fellows, provided that they do not travel on the day before Good Friday.

#### Books Received.

ROUNDABOUT HARLEY STREET: THE STORY OF SOME FAMOUS STREETS, by C. P. Bryan, M.B., B.Ch.: 1932. London: John Bale, Sons and Danielsson, Limited. Crown 8vo., pp. 272. Price: 5s. net.

ACROMEGALY, by F. R. B. Atkinson, M.D., C.M., with foreword by Sir Arthur Keith: 1932. London: John Bale, Sons and Danielsson, Limited. Demy 8vo., pp. 266, with illustrations. Price: 21s. net.

MEDICINE: ESSENTIALS FOR PRACTITIONERS AND STUDENTS, by G. E. Beaumont, M.A., D.M., F.R.C.P., D.P.H.: 1932. London: J. and A. Churchill. Royal 8vo., pp. 735, with 61 illustrations. Price: 21s. net.

LA CRITICA MEDICA NELLA STORIA: ALESSANDRO MAGNO, by Mario Bertolotti: 1932. Torino: Fratelli Bocca. Royal 8vo., pp. 413, with illustrations.

THE MAGIC CARPET AND OTHER ESSAYS AND ADVENTURES, by S. Elliott Napier: 1932. Australia: Angus and Robertson. Crown 8vo., pp. 237. Price: 6s. net.

**STATISTICAL METHODS FOR RESEARCH WORKERS**, by R. A. Fisher, Sc.D., F.R.S.; Fourth Edition; 1932. Edinburgh: Oliver and Boyd. Demy 8vo., pp. 320. Price: 15s. net.

**COLLECTED PAPERS OF THE MAYO CLINIC AND THE MAYO FOUNDATION**, Edited by M. H. Mellish-Wilson and R. M. Hewitt; Volume XXIII, 1931; 1932. Philadelphia and London: W. B. Saunders Company; Melbourne, Brisbane and Christchurch: James Little and Son. Royal 8vo., pp. 1255, with illustrations. Price: 63s. net.

**MAYO CLINIC MONOGRAPHS: MINOR SURGERY OF THE URINARY TRACT**, by H. C. Bumpus, Junior, Ph.B., M.D., M.S.Urol., F.A.C.S.; 1932. Philadelphia and London: W. B. Saunders Company; Melbourne, Brisbane and Christchurch: James Little and Son. Royal 8vo., pp. 124, with 57 illustrations. Price: 9s. 6d. net.

**BIOCHEMISTRY IN INTERNAL MEDICINE**, by M. Trumper, Ph.D., and A. Cantarow, M.D., with foreword by E. H. Funk, M.D.; 1932. Philadelphia and London: W. B. Saunders Company; Melbourne, Brisbane and Christchurch: James Little and Son. Royal 8vo., pp. 454, with illustrations. Price: 36s. net.

**GONORRHEA IN THE MALE AND FEMALE: A BOOK FOR PRACTITIONERS**, by P. S. Pelouze, N.D.; Second Edition; 1932. Philadelphia and London: W. B. Saunders Company; Melbourne, Brisbane and Christchurch: James Little and Son. Royal 8vo., pp. 440, with illustrations. Price: 36s. net.

**PHYSICAL THERAPEUTIC TECHNIC**, by F. B. Granger, A.B., M.D.; Second Edition, revised by W. D. McFee, M.D.; 1932. Philadelphia and London: W. B. Saunders Company; Melbourne, Brisbane and Christchurch: James Little and Son. Royal 8vo., pp. 436, with illustrations.

**THE BREAST-FED BABY IN GENERAL PRACTICE**, by L. G. Housden, M.B., B.S.; 1932. London: H. K. Lewis and Company, Limited. Crown 8vo., pp. 127.

**A NEW THEORY OF CANCER AND ITS TREATMENT**, by C. F. Marshall, M.Sc., M.D., F.R.C.S.; Part II; 1932. Bristol: John Wright and Sons. Crown 8vo., pp. 56.

## Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.I.

BRANCH.	APPOINTMENTS.
<b>NEW SOUTH WALES:</b> Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary limited. People's Prudential Assurance Company Limited. Phoenix Mutual Provident Society.
<b>VICTORIAN:</b> Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
<b>QUEENSLAND:</b> Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associated Friendly Societies' Medical Institute. Mount Isa Mines. Toowoomba Associated Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their agreement to the Council before signing.
<b>SOUTH AUSTRALIAN:</b> Secretary, 207, North Terrace, Adelaide.	All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
<b>WESTERN AUSTRALIAN:</b> Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
<b>NEW ZEALAND (Wellington Division):</b> Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

## Medical Appointments.

Dr. S. Rosebery (B.M.A.) has been appointed Honorary Physician at the Coast Hospital, Office of the Director-General of Public Health, New South Wales.

Dr. W. A. J. Brady (B.M.A.) has been appointed Acting Medical Superintendent of the Hospital for the Insane, Ararat, Victoria.

Dr. H. M. Moran (B.M.A.) has been appointed Honorary Director of the Radium Department, Coast Hospital, Office of the Director-General of Public Health, New South Wales.

Dr. J. R. Nimmo (B.M.A.) has been appointed Deputy Quarantine Officer, Thursday Island, pursuant to the provisions of the *Quarantine Act 1908-1924*.

Dr. E. P. Edwards (B.M.A.) has been appointed Certifying Medical Practitioner at Kyabram, Victoria, pursuant to the provisions of the *Workers' Compensation Act 1928*.

Dr. R. T. Binns has been appointed Honorary Clinical Assistant to the Medical Section, Adelaide Hospital, South Australia.

## Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser", page xiv.

**BRISBANE MATER CHILDREN'S HOSPITAL, BRISBANE, QUEENSLAND:** House Physician and House Surgeon.

**GYMPIE HOSPITAL BOARD, GYMPIE, QUEENSLAND:** Junior Resident Medical Officer (male).

**LAUNCESTON PUBLIC HOSPITAL, LAUNCESTON, TASMANIA:** Resident Medical Officer (male).

**PERTH HOSPITAL, PERTH, WESTERN AUSTRALIA:** Resident Pathologist and Biochemist.

**ROYAL NORTH SHORE HOSPITAL OF SYDNEY, NEW SOUTH WALES:** Honorary Officers.

## Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor", THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.) Quarter and are renewable on December 31. The rates are £1 for Australia and £2 5s. abroad per annum payable in advance.

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